

THE CASE FOR ADAPTIVE EVOLUTION:
THE DONG VILLAGE OF DIMEN, GUIZHOU PROVINCE,
CHINA

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Abstract

Despite the fact that over 90 % of the Chinese nationals are Han ethnicity, China is considered a multiethnic country. There are many ethnic minority groups living in various parts of China, and their culture blends with and affects the Han culture to create the amazing mixture and diverse Chinese culture. However, this diversity has gradually lost its magic under the influence of rapid economic growth which encourages uniformity and efficiency rather than diversity and traditional identity. As a result, the architectures and languages of many ethnic minorities are gradually assimilated by the mainstream Han culture. Therefore, the research and preservation of ethnic minorities' settlements have become a crucial topic.

As one of the representative ethnic minority, the Dong people and their settlements contain enormous historical, artistic and cultural values. Most importantly, its utilization of space is the foundation of its sustainability and development. As a living heritage, the maintenance of public space is crucial to the development of Dong village since the traditional function of its space makes up a major part of its cultural heritage. However, the younger Dong people's changing social practices and life-style have resulted in the alteration of their public space. Despite the difficulties in keeping its traditional living space, Dimen Dong village still plays a positive role in maintaining its ethnic culture. The support and protection of ethnic villages like Dimen should thus be evaluated and taken into serious consideration.

This paper mainly focuses on analyze the relationships between the village's public space and the residents' behaviors, aesthetic experience and the culture. It also reveals the

formation mechanism of public space to provide theoretical guidance for the future design of Dong village. By referring to existing documents, scholarship, on-site surveys and photography to support my case studies of various Dong settlements, I will also provide suggestions on possible sustainable development of local tourism and heritage conservations of the Dong area.

The Dimen village in Liping County of Guizhou province in China is the main case study of this research. I will discuss the formation mechanism of its public space and trace back the historical configuration and adjustment of its spatial components. The case studies of Gaoding village of Guangxi province and Zhaoxing village of Guizhou Province also offer me some new ideas on the improvement of Dimen village.

This paper also tries to reveal that the different ideologies and attitudes of the villagers and the local government towards cultural protection and sustainable development. In the ending chapter, I propose a plan that may give some suggestions on how to improve the living environment for local villagers. This proposal includes reformation of the current layout of the Dimen village and renovation suggestions of the buildings. It also aims to improve the functionality of the public space as well as the infrastructures of the village for future development of tourism and economy.

Key words: Dong village; Dimen; public space; evolution; adaptive

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1 Statement

1.1 Source of This Research

1.1.1 Rural Settlement and Living Heritage

Cultural heritage consists of both the physical sites and the invisible cultural elements. It is unique and irreplaceable in history. The *Convention Concerning the Protection of the World Cultural and Natural Heritage* (1972) states that monuments and groups of buildings “which are of outstanding universal value from the point of view of history, art or science,” as well as sites “which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view” can be defined as cultural heritage. According to this definition, earlier classification of cultural heritage seems to emphasize more on the physical features, and a majority of cultural heritages are memorial architectures.

As this field of study develops through times, the researchers have also developed a more diverse views of cultural heritage. Other than the memorial value of monuments, the scholars are paying more attention to the cultural value of traditional rural architectures and settlements. As a result of China’s richness and diversity of its culture, the varied natural environment and local customs have given birth to distinctive rural settlements. Since the inhabitants of a majority of these settlements have inherited the traditional functions of certain space, these settlements are considered as *living heritage*. The maintaining of traditional living space also reflects the continuity of regional and ethnic culture (fig1-1).

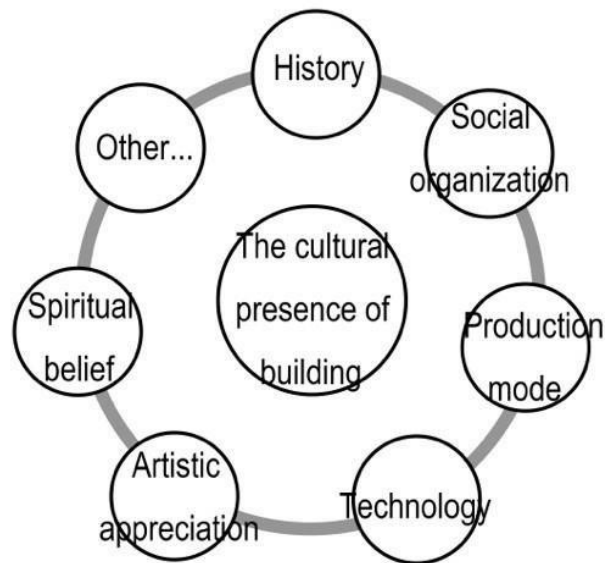


Fig.1-1 The cultural presence of building

The space within these settlements is multi-functional and consists of a variety of architectural and spatial forms. In general, a space within a settlement can be classified into functional space or ritual space. The former refers to a space that is used for daily accommodations and productions and can be further divided into public functional space that are accessible to all the inhabitants, or private functional space that are occupied by individual owners. The latter is a public space that is used for sacrifice, ceremonies and entertainment. For example, temples or public squares are typical ritual spaces. However, the boundary between these two types of space is not strictly defined because private houses may occasionally hold certain ceremonies and ritual spaces can also be used for everyday productions and activities.

1.1.2 Inspiration For Choosing This Topic

In the summer of 2014, I went to conduct a renovation project in Dimen village (Guizhou Province). In the process, I noticed how the villagers had exhibited their unique life styles and social customs in the public spaces. This finding inspires me to investigate more into utilization of the village's public space.

1.2 Research Background and Significance of This Study

This thesis is aimed at analyzing the formation mechanism of public space in Dimen village by studying its historical changes, cultural traditions, lifestyles, existing block landscape and space joints. This mechanism can be employed in refreshing and reconstructing Dong villages so as to get well-arranged public space. On the basis of inheriting its original culture and tradition of public space, it's of great importance to infuse some new elements to make Dong village's public space orderly and vigorous.

1.2.1 Background

There are 55 officially documented ethnic minority groups in China, which account for 8.5% of the total Chinese population and their settlements are spread in 60% of China's land areas. The nationwide consensus in 2000 showed that there were more than 2.9 million of Dong people living in China. Most of them are living in Guizhou, Hunan, Guangxi and the nearby areas. There are more than 1.6 million of Dong people—about half of their total population—are living in Guizhou Province, especially in the Qiandongnan Miao and Dong Autonomous Prefecture.

The Dong language is only transmittable in oral forms since they do not have their own writing system. This group lives and grows in a specific ecological environment which allows them to develop unique lifestyles, dwelling habits and ethnic cultures.

1.2.2 The Significance of This Study

Traditional settlement of ethnic minority is the carrier of their people's daily life, productions and dwellings; it makes up an important component of China's social structure and rural development; it is rustic but timeless and contains rich culture. The history and establishment of various ethnic villages are deeply rooted in every settlement.

The significance of the study on traditional ethnic settlement's public space, which focuses on its innate mechanism of formation and the interaction between the people and the space, will strengthen our understanding on ethnic minority's culture and development. After all, I believe this study will preserve the vigorous and humanistic culture of ethnic settlement.

Studying the formation mechanism of Dong village's public space in Qiandongnan will contribute to both the urban and rural development in Dong areas. Exploring the relationships between Dong area's social development, environmental changes and the development of village's spatial form will help scholars to understand its pattern in development and eventually bring some new ideas to the field of architectural theory. At the same time, this study will provide theoretical support for the future planning of Dong village's spatial form, expansion of tourism and constructing of new villages in Dong area.

After thousands of years of development, the Dong villages in Qiandongnan area have formed a steady and unique spatial form. The study on the changing pattern of Dong

people's social development and living environment is building up the theoretical foundation for researching Dong villages' spatial form. Furthermore, the formation mechanism of the of Dong villages' spatial form is an important theoretical field for understanding ethnic architecture, morphology of ethnic village and ancient ethnic culture. Last but not least, the study of the impact of environment on the village's entire spatial form will further contribute to the academic theory of future planning of ethnic minority's settlements.

1.3 Study Method

In order to support my thesis, I first review the existing scholarships on the related topic. I will widely collect the existing documentations of the traditional accommodations and architectural forms, urban spatial form and the environment of multi-ethnic area so as to form a bigger picture of existing research methods in the related field.

Next, I conduct a fieldwork in the Dong village. During this fieldwork, I have collected datas of local customs and village construction through taking photos and sketching of the actual settlement.

Last but not least, I classify all the results and datas that I have collected through the mentioned two methods into respective categories for cross-reference. The final step is to elaborate and conclude on the acquired datas accordingly.

2 The Formation Mechanism of Dong Villages'¹ Traditional Public Spaces in Southeastern Qian (Guizhou province)

A certain formation mechanism leads to the natural formation of a village and its public space. Factors such as population composition, economical conditions and the internal configuration of natural, social and cultural environments have corresponding impacts on the inner structures of formation mechanism. Most of the time, the above-mentioned factors work together in deciding the formation of a village's public space. In order to understand the formation mechanism of Dong village's public space, we must look closely into the interrelated influences of these factors. After comparing the results from my fieldwork that was conducted in the actual Dimen Dong village with the existing literatures and documentations, I classify these factors into 4 major categories: the historical and population change, the influences of natural environment, the effects of local social customs and the limitation of production system.

2.1 The Origins and History of Dong People²

The Dong ethnicity, also known as the Kam, is a minority living in southwest part of China with a long history and special cultural traditions. Field investigation and literatures

¹ Dong village: a village with a lot of minority people named as Dong people

² Dong people: one of the Chinese 56 minorities in southeastern Guizhou province

will be combined in this part, which can help us identify the body of public space and the origins of traditional activities of Dong people's village in southeastern Qian.

Dong people are mainly settling between 25 degrees and 31 degrees north latitude, and stretching from 108 degrees to 110 degrees east longitude (Fig. 2-1), which is around the border of Guizhou, Hunan and Guangxi Provinces, as well as southwest part of Hubei province. The landscape of the Dong settlement is high in the Northwest, with the average altitudes of 2000 meters, and low in the



Fig.2-1,the main distribution of Dong people in southeastern Qian

Southeast, with the average altitudes 300 meters. It is surrounded by Xuefeng Mountain

in the East, the offset of Miaoling Mountain in the West, Jiuwan Mountain and Yuechengling Mountain in the South as well as Wuling Mountain and Foding Mountain in the North. The Leigong Mountain that is located right in the middle of their settlement area is stretching from the Northwest to the Southeast and serving as the watershed of Yangtze River and Pearl River. The Duliu River—a tributary of Pearl River—circulates around the southern area of the Dong settlement and serves as the natural border that separates them from the settlements of the Buyi, the Miao and the Han people. The eastern and northern areas are surrounded by tributaries of Yangtze River, such as Yuan River and Wu River which separate them from Han people. Many other rivers, including Wuyang River, Qingshui River, Xun River and Qu River are also running through the Dong areas.

Dong people's three divisions—Dandong, Jiaodong and Laodong people are originated from the ancient Baiyue people³ who used to settle in the Lingnan⁴. The Jiaodong and the Laodong share the same ancestors—the Luoyue and the Liao people, while the Dandong people trace their lineage back to the Dan and the Xi'ou people. These three branches of Dong ethnicity were formed during the Song dynasty (960 A.C.—1279 A.C.). Owing to the diversity in their ethnicity and varied distribution of lands, the cultures in each branch and area are distinctive. On the one hand, through marriage and relocation, the Dong people from different branches have been gradually assimilated by one another. On the other hand, the cultural differences of individual branch still serve as a natural border that separates various branches. As a result, two major settlements, the southern and the northern, are formed according to their cultural differences. The southern settlement is mainly occupied by Laodong people who worship the Sasui (a female warrior in ancient Dong legend), and practice the customs of Xingge Zuoye and Zouzhai⁵; they also specialize in building, singing, dancing and Dong drama performance. Their costumes are mostly decorated with embroidery. The northern settlement is mainly inhabited by Jiaodong people who practice the customs of Wanshan and Gan'ao, and worship the Feishan Deity (a male warrior in ancient Dong's legend). The Dandong people mainly live in the central area. There are studies demonstrating that the cultures and religions of these three

³ Baiyue: the hundred of minorities in Guangdong, Guangxi, Hainan provinces

⁴ Lingnan: a geographic area referring to the lands in the south of China's Nan Mountains: Tayu, Qitian, Dupang, Mengzhu, and Yuecheng. The region covers the modern Chinese provinces of Jiangxi, Hunan, Guangdong, Guangxi, and Hainan as well as modern northern Vietnam.

⁵ Zouzhai: Xingge Zuoye and Zouzhai: both are customs that allows young and unmarried Dong men and women to involve in non-sexual interactions through singing in the night.

branches are originated from different sources, which further reveal the cultural diversity of Dong ethnicity.

Dong was used to be called the Gaeml, the Jeml or the Geml. It was until the establishment of the People's Republic of China, this ethnic minority was officially named as the Dong, but they are still more widely known as the Kam in other languages. Since only a very few scholarships have investigated into Dong's history, I have to rely on local legends, notes from past travelers and discovered historical relics to find related information. Most of the scholars generally agree that Dong people is a lineage from the ancient Luoyue, who used to occupy the western area of Guangxi Province. An ancient folk song of Dong people, *The Ancestors Go Into The Village*, states that, "We are the descendants of the king of old Yue and we have no difference in social status and economic conditions." Past archaeological discovery also shows that in the Neolithic Age, there were Yue people living in areas that belong to the Dongs today.

2.2 The Influences of Natural Environment on the Formation of Dong Villages' Public Space

Dong people have excelled in adapting and reconstructing the natural environment. In the process, they have built unique Dong villages with distinctive ethnic characteristics. Despite the challenges of harsh natural environments on their construction activities, the Dongs were able to develop architectural materials through their natural resources. Due to the intricate geographical landscape in their settlement areas, the villages are usually scattering across a large area, but the houses in each village are concentrated.

Furthermore, they build the *ganlan*-styled or stilt houses to adapt the particular topography and limited flat land areas among the mountains.

Since the Song dynasty, Dong people had been locating in a relatively concentrated and stable settlement areas, which are mostly unchanged even till today. They are mainly located on the Yunnan-Guizhou Plateau and among the hills in Hunan and Guangxi provinces; several streams and rivers running through these areas and most of which merge into the Yangtze River. Up to 90% of these areas are steep mountains which ensure the preservations of vegetation. The climate in these areas is humid subtropical monsoon climate which is neither too hot nor too cold—the average annual temperature ranges from 14°C to 18°C, and the amount of rainfall ranges from 1000mm to 1400mm. The climate ensures a favorable natural condition for farming, forestation and fishing. The large amount of forest in these areas is the major source of economic development which provides a relatively steady supply of raw materials, such as Chinese fir woods that are used for building Dong stilt houses (Fig 2-2). Therefore, there is saying that describe the southeastern Qian area as “seventy percent of the land are mountains, ten percent are water, the rest twenty percent are farmland.”



Fig 2-2 natural environments in southeastern Qian

Despite this hilly terrain condition, the Dong settlements consist of several unique architecture designs and layouts that help the people to survive in the challenging environment. First of all, the Dong people can only build their settlements on the limited flatlands that are found in either the river valleys or on top of the hills. Limited flatlands also affect the size of farmland, thus Dong people have to scatter their concentrated villages across a wide area to ensure the supply of food for each and every village.

Secondly, the complicated natural geographical conditions also result in a diverse choice of layouts for different villages: While the villages located on top of the hills are built on terraces and form a special architectural landscape and public space winding up along the hillside, the villages located in the valleys are arranged along the banks and linear

alleys are formed between the houses. Various terrain conditions provide favorable topography for building residential houses. They choose stilt houses to suit the elevation of mountain areas and the empty spaces between the supporting stilts are transformed into extra storage. By doing this, the Dongs take full advantage of limited flatlands to satisfy their accommodations and daily needs. Therefore, *ganlan*-styled buildings fully display the uniqueness and creativity of Dong people's architectures and public spaces.

(Fig 2-3)

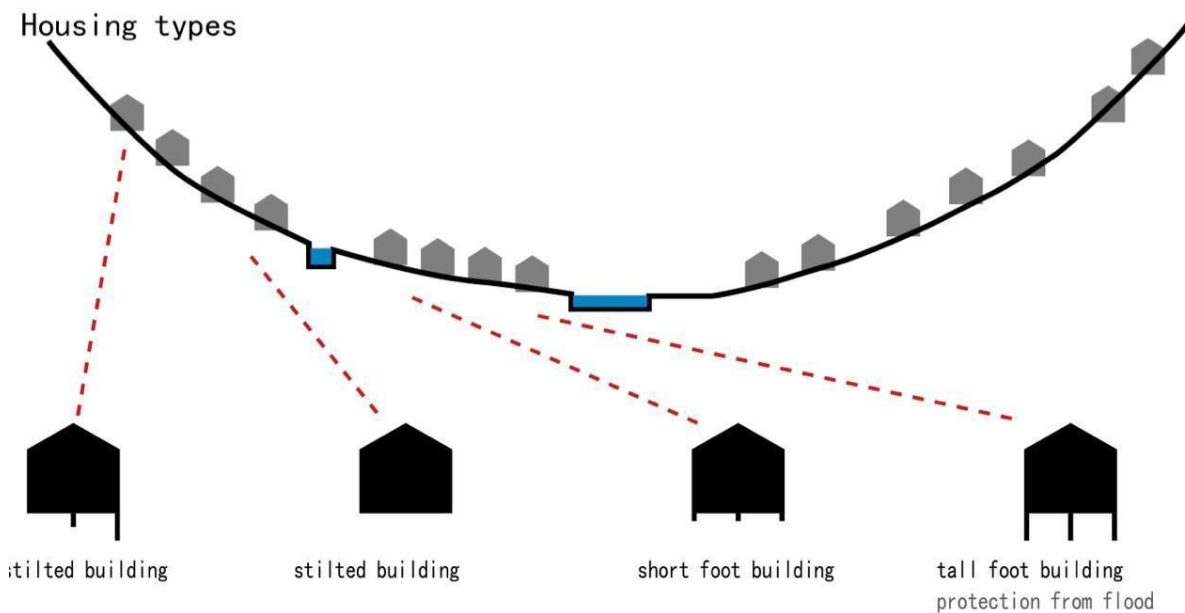


Fig 2-3 typical types of Dong villages'

Lastly, the abundant forest resources of the southeastern Qian area have provided certain favorable conditions for building houses. Qian abounds with the Chinese fir trees which are valuable raw materials for building the stilt houses. As a result, Dong people can easily access to a large amount of inexpensive but precious woods for construction activities. At the same time, the consistent choice in building materials also allow the Dong villages to maintain a highly unified and harmonious looking buildings and public spaces.

2.3 The Influence of Dong People's Social Customs On the Villages' Spatial Forms

Every Ethnic minority has their individual social custom and culture that can be found in various aspects of their habits, such as eating, housing, wedding, funerals, religions and folklores. Occasionally, these customs also directly or indirectly manifest through the spatial forms of the settlements and the degree of impact on different villages may vary. Although no direct link between a drastic alteration of Dong architectures' appearance and certain new change in customs is found in existing scholarships, the social functions and the distinctive characteristics of public spaces can indeed reflect the influence of customs to a certain extend.

Based on the field investigation and review of past literature, I have divided the Dong's social customs into the following four categories: customs in cloths making, customs in eating and drinking, customs in dwellings, customs in wedding, funerals and religious beliefs as well as customs in traditional festivals and entertainment. These customs have directly or indirectly manifest through the villages' spatial forms.

2.3.1 The Influence of Dong's Cloths Making Customs on the Villages' Spatial Forms

There are two aspects of Dong people's cloths making customs that cause certain influence on the villages' spatial forms—making and drying of their traditional self-dyed Dong cloths. This influence can be observed with the change of seasons and in daily lives of the Dong areas. The Dong people's traditional costumes, especially in southern areas, are mainly made from their homespun and dyed Dong fabrics which are decorated with fine cloths and silk (Fig 2-4). After the Dong women have dyed the raw fabrics, they hang

them outdoor to dry for several days. Therefore, in the season of the cotton harvest (usually in July, August and September), large numbers of Dong's homemade cloth are seen hanging around the houses, which form a unique and substantial seasonal public spatial feature. (Fig. 2-5)

The traditional Dong costumes that are made from these fabrics become the distinctive ethnic characteristics of the Dongs and most of them enjoy wearing them in everyday life. Especially during the traditional festivals and important ceremonies, colorful ethnic costumes turn out to be one of the most special materialized spatial element in Dong villages.



Fig 2-4 (1) (2) Villagers are weaving



Fig 2-5(1) (2) Cloth making and drying

2.3.2 The Influence of Dong People's Eating Customs on the Villages' Spatial Forms

Dong people's food customs have both direct and indirect influences on the villages' spatial forms. First of all, Dong people take four meals a day which consist of two main meals and two tea breaks. People living in the river valleys enjoy eating short-grain rice, while people living in the mountain areas prefer glutinous rice. Unlike the Hans, Dong people do not use chopsticks for eating. As the most stable diet of the Dongs, there are many variations in the daily consumption of rice—it can be eaten directly after cooking, or made into porridge, rice dumplings and rice cake. Therefore, the Dongs have the habits of molding rice balls with hands before eating, which is called “chi zhuanfan⁶” (Fig. 2-6). Their custom is to cook a day's meals in the early morning and take the food with them to the farming fields. Among all the various types of sticky rice, the native-bred kam sweet rice of the Dong areas is the most popular choice for making rice balls. There is a saying that, “One family cooking kam rice, the fragrance will overwhelm the whole village.”



Fig. 2-6(1) (2) Eating pilaf with hands

6 chi zhuanfan: eating hand-mold rice balls

Dong's custom of eating has a direct effect on their spatial arrangement. In order to show their hospitality to the guests, the Dongs have a habit of presenting their feast on a long wooden table (Fig. 2-7). When a Dong family is hosting a large group of guests or organizing a big family gathering, they will cook a wide variety of delicious Dong dish and present them all at once on the homemade long table. In order to make space for the, the Dong people require large open areas either inside or outside their houses. For example, the structure of Dong houses always consists of a long loggia on the upper floor of their house, which is usually used as the space to fit in long tables. At the same time, a large courtyard or appropriate spacings are carefully planned and maintained within a neighborhood to ensure enough open areas for gatherings and long table feast.



Fig.2-7 (1) (2)Eating at a long wooden table outside

Dong people's consumption of rice and eating culture also cause certain direct and indirect impact on their public space. During annual autumn harvest, the villagers will hang stretches of rice to dry. As a result, most of the empty spaces in between the houses and along the sunny side of the slopes will be covered by yellow rice drying stands in the

autumn, which turn out to be an indirect and seasonal spatial form of the Dong village (Fig. 2-8).



Fig 2-8 a beautiful landscape of yellow grains hanging on the shelves in harvest time

2.3.3 The Influences of Dong People's Customs in Dwelling on the Villages' Space Forms

Dong people's living habits have apparent influences on the distribution and spatial formation of villages. As I have argued in the previous sections, Dong people usually live in concentrated village that is sparsely separated far apart from one another to ensure sufficient farmland.

Dong people, especially those located in the river valleys, are accustomed to live in large groups in one village, which can consist of up to 500 households and very few families live separately. In their *ganlan*-style houses, the residents live upstairs above the ground and spaces in between the stilts on the ground-floors are used to keep the livestock. The house arrangement of utilizing the ground floor of *ganlan*-styled houses

also defines to Dong's unique dwelling architectures. These houses are built very near to each other that the long balconies and roofs are touching each other, and a big courtyard is surrounded in between the houses for common events.

Due to the mass usages of wooden building materials, the prevention of fire hazards are also taken into serious considerations. Therefore, the villages' spatial arrangements always allow a number of small streams running through them. The affluent water resources also encourage the advancement in Dong bridge building technics. The roofed bridges which the Dongs called "wind and rain" bridges are best-known for their unique architectural style—they are usually roofed with tiles that are engraved with flowers. Some of these bridges, like the Chengyang "wind and rain" bridge even has five large pagoda-like, multi-tier and extravagantly carved pavilions are built along the sides of the bridges. Since these bridges are usually built into covered walkway with railings and benches, the local villagers enjoy to gather on them to admire the water scenery. The villagers also build their grain barns across the fish ponds to protect them both from rats and fire.

Furthermore, drum towers are built in the center of the village, which work as the alarm system of any fire hazard and it is surrounded by a number of fish ponds to reserve water for saving fire. The open areas surrounding these drum towers also form the main public spaces for village gatherings and meetings. Due to the importance of these drum towers, their architectural designs and decorations are also unusually lavish and recognized as another symbolic significant physical spatial element of the Dong village. Together, these "wind and rain" bridges, drum towers and rich water resources shape the typical Dong villages' spatial images.

2.3.4 The Influences of Dong People's Customs on Religious Belief and Traditional Festivals on the Villages' Space Forms

Dong people's religious activities and traditional festivals manifests into another major factor that contributes to the villages' spatial forms. This impact can be observed through the villagers' utility of the public spaces to fulfill the needs of these activities and festivals. At the same time, the religious and celebratory functions of a public space is juxtaposed with the behaviors of the people occupying the space—only when these two elements are combining and interacting with one another, the spatial form of a public space in the Dong village can be defined.

For instance, Dong people worship the goddess Sasui, and build altars and ancestral temples to offer sacrifices to the goddess. During the sacrifice activities, the Dongs put on their traditional ethnic costumes and gather in front of the drum towers or temples. A huge bon-fire is would be lit in on the open area and the villagers will conduct a series of events and performances, such as dancing and singing, around the fire. At these moments, the drum towers, altars and temples become elements that define a substantial space; the human behavior of worshipping Sasui turns into spatial behaviors that only happens in this specific space—together, the physical elements and space behaviors become a spatial landscape of this public space.

For another instance, other public activities such as gathering within or in front of the drum towers for discussion of village affairs are also spatial behaviors that combine with the drum towers to form a specific but temporary spatial form. The above-mentioned places are all examples of symbolic spatial forms that define the public spaces of the Dong village.

Other big activities, such as Bullfighting, encourage the construction of specific architectures like the bullrings. These places consist of unique functions and create a even more direct link between the spatial behaviors and the physical spatial elements.

2.4 The Influences of Dong People's Agricultural Production Patterns on the Villages' Spaces Forms

Since the Song dynasty, several written records of Dong people and their villages can be found in historical documentations. Among these records, surprisingly complete and detailed plans of their traditional architectures can be found. Many of the local craftsmen are still conservative about their skills and choosing oral transmission to pass down the knowledge, hence even till today, most of the local architectures are keeping the traditional artistic designs. This observation shows that the Dongs have inherited and preserved their ancestors' way of living and dwellings without much difficulties. In other words, the traditional life-styles of the Dongs have not encounter too much impacts could cause drastic changes to the living spaces. Therefore, my study will discuss in this section about the relations between Dong people's traditional ways of production and the villages' spatial formation.

2.4.1 The Relationship Between Traditional Mode of Production and The Villages' development

Dong people's traditional ways of production and the villages' development have strong affiliations in maintaining the current living methods and spaces. First of all, the Dongs' main source of supply for food still comes from primitive agriculture which can

only maintain relatively low productivity. As a result, Dong people does not have abundant resources for advancement in technology and expansion on living and production spaces. On the other hand, the settlement arrangement of spreading the villages across a large area, which has been discussed in the previous section, is especially adapted to ensure a sufficient supply for each village. Since every village is able to form a self-sufficient agricultural economy that depends mainly on rice cultivation and partially on fishery, plantation of Chinese fir and limited household livestock, no crucial needs to increase the productivity is required throughout the time.

Secondly, the ruling powers the Chinese territory have surprisingly maintained the similar convention of “governing the locals by following their conventions⁷” in the Dong area, despite the changing policies and rulers over the time. The traditional chieftain system thus maintains its power even till today while the Han ruling power and education system do not cause too much influence in these areas. For these two reasons, Dong people had hardly obtained Han’s ideology and advanced agricultural methods. This traditional way of production leads to certain degrees of backwardness among the Dong areas in comparison to nearby Han areas. Only after the introduction of modern technology, which enhances the communication between different ethnic groups, and gradual adaptation of more advanced agricultural methods, acceleration in the economical development of the Dong areas can be observed in recent years.

⁷ Governing the states by following their conventions: in ancient china, rulers didn’t change their policies to the southwestern minorities and reserved the ethnic groups’ chieftains.

In the northern part of Dong area, local people strive to develop and manufacture by-products of local raw materials, which leads sub-urbanization of the villages in this area. On the contrary, the southern Dong people are still depend mainly on primitive agriculture for self-sufficient, which results in the unequal development of the southern Dong area. This backwardness also holds back the development and innovation in the planning of the southern Dong settlements.

Marx believes that the economic base superstructure in a society is interrelated. The continuation of primitive life-styles also determines the limited needs and possibilities for rapid economical growth of the southern Dong areas. At the same time, the development and innovation of its spatial formation is also held back by the limited change in production. Moreover, the change in spatial forms of ethnic settlements usually lags behind of the actual economic development. Therefore, the preservation of traditional settlement is the manifestations of the low productivity and primitive life-styles of the Dong people.

2.4.2 The influences of Dong people's traditional mode of production on the villages' space forms

The relations between traditional modes of production and the villages' spatial forms' development are embodied in the following two aspects:

Firstly, the development of Dong villages' space forms, as well as architectural arts and skills, is a reflection of Dong areas' productive power and their mode of production. For instance, the Dong villages in Southeastern Qian area were affected by the policy of "governing the states by following their conventions," therefore the traditional chieftain

system is inherited. The settlements are barely influenced by Han people's ideology and new technology, thus the productive power of these areas remain low and urbanization is unlikely to happen in the near future. Moreover, low productive force also discourage expansion of living space and drastic innovation of the present living conditions. Therefore, the Dongs continue to live in their traditional settlement with no urgent desires for further developments. The villagers are satisfied with traditional construction methods and house planning since no innovative functions and extra storages are expected.

Secondly, the Dong people's architectural skills are maintained at a relatively primitive level due to the lack of needs for advancement. The Dong people settling in the Southeastern Qian areas are still relying on the primitive agriculture and plantations for self-sufficiency because the abundant forestation and wood resources ensures adequate supply of raw materials. Most of the villagers have a predilection in choosing local fir wood for their building materials. These preference and stable supply of similar raw materials also encourage the continuous adoption of traditional constructing methods as well as aesthetic in building their houses. As a result, stilt-houses are still the major architectural forms that the Dongs are adopting.

2.5 Chapter Conclusion

In this chapter, a great emphasis has been put on analyzing the influences of Dong people's history and development, natural environments, social customs and modes of production on the villages' spatial forms in southeastern Qian Dong settlement.

Learning about the history and development of Dong people in southeastern Qian helps me understand the factors that influence the architectures and public spatial forms of the Dong settlements. Understanding their traditional activities and mode of production also allows me to explore the interrelationship between the spatial behaviors of the inhabitants and the spatial formation.

Next, understanding the local climate, geographical features and natural resources gives me a better overview of the impacts of natural environment on the formation of Dong settlement. Mountainous landscape in Southeastern Qian area is one of the main reason for the Dongs to build their concentrated village, but spread out their villages far apart from each other. Dong's adoption of *ganlan*-styled buildings is also a result of settling in a hilly terrain. In addition, stable supply of fir wood encourages Dong's usage of wooden building materials and at the same time, uniforms the design and appearance of the buildings.

Furthermore, the effects of Dong people's social customs have on the villages' spatial forms are manifold. These influences may be direct or indirect, and some of them are temporal and seasonal. At the same time, the human activities and spatial behaviors play a big part in transforming the existing physical spatial elements into a new spatial form. In other words, human behaviors and physical space interact with one another to create new spatial forms.

Last but not least, the impact of Dong people's mode of production on the villages' spatial formation can be observed through the Dong's reluctance and lagging in innovative changes of the spatial formation and architectural designs. On the one hand, primitive mode of production leads to low productivity and slow growth in economy and thus

under-development in the settlements' modernization. On the other hand, owing to the Dongs' under-development, traditional spatial functions and customs are well preserved and turned into valuable resource for future anthropological and archeological research on ethnic minority.

The unique spatial formation of the Dong villages consist that are determined through the combined impacts of several factors. These factors work and interact with each others to cause certain effect on the ancient Dong people's choice of building materials, settlement arrangement, spatial functions and other possibilities of their settlement space. These choices are still mostly maintained and inherited despite the pressing steps of modernization and external exploitation of local resources. Therefore, the formation of spatial forms of Dong settlement is also a reflection of the characteristics and cultures of this ethnic minority. In the next chapter, I will use Dimen village as a case study and focus on the analysis of the specific types of Dong villages' spatial forms in Southeastern Qian area.

3 The Overview and History of Dong Village in Dimen Area

3.1 The Overview of Dimen Area

3.1.1 Geographical Location

The Dimen Dong villages are located 5 km north of the Maogong district which is the western part of Liping county in Guizhou Province (Fig.2-9). Maogong is surrounded by Mengyan town in the North, Bazhai village in the East, Jiuchao town in the West and Yandong town as well as Koujiang village in the South. The Dimen Dong village is located at the north of Maogong town center and only one main road connects them.

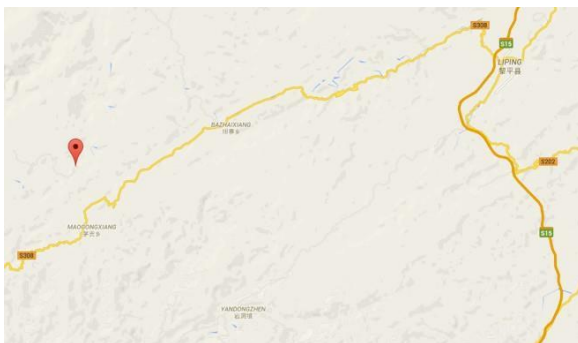


Fig. 2-9 Location

3.1.2 Natural Environments

Dimen is a name translated according to its pronunciation in Dong dialect. In Dong dialect, “Dimen” means a place where water is spilling out, which symbolizes the prosperity of the villages and population. This name also reflects the rich water resource that can be found in the Dimen area—Dimen village is nestling around drainage divide of the Yangtze River basin and the Pearl River basin. The average altitude of this area is 740 meters and only mountains of median or low elevations can be found. The annual temperature is 15℃ degree and the annual average rainfall is 1308 millimeters. The forestation mainly consists of fir woods and covers nearly 62% of the village’s land. The Qiansan River runs through the village and provides abundant water supplies for the villagers. This river irrigates the terraces along the hillside divides the Dimen area into the northern and southern parts but connects Dimen with another Dong village, Dengcen, which is just a kilometer away.

3.2 Social Economy

There are around 2400 people and 528 families living in the Dimen village. The total area of the village is about 23 square kilometers, in which 1111.5 mu⁸ is farmland. In 2009, Dimen village’s per capita income is about 1990 yuan, which reflects an under-developed economic condition. Most of villagers’ income come from local plantation, raising livestock and working in other areas. Their agriculture ranges from rice, fir wood

⁸ mu: A traditional Chinese unit for measuring land area. 1500 mu equals to 1 square kilometers

cultivations to pigs and cattle rearing, as well as rice-fish culture. In addition, traditional handicrafts such as paper-making, wine making and sculptures are passed down among the local Dong people and gradually become a major source of income. In recent years, the rich traditional cultures of Dimen villages attract a massive number of tourists and scholars which encourage the local tourism and economy.

3.3 The Landscape and Structure

The Qiansan River is one of the sources of the Qingshui River in the Yangtze River system. Dimen Villages and Dengcen villages are locating at the upstream and downstream of this river respectively. The river and the two villages are nestling in a river valley that is covered with verdant and lush forests. The houses are designed and built facing the water to suit this specific terrain. The slope roofs of these houses are usually covered with blue tiles which are easily matched with the waters, the farmlands as well as the lavish greenery.

In Dong people's dialect, village is called Senl Xaih. Senl comes from the word "cun (村 village)" and Xaih comes from for "zhai (寨, quarter)" in Mandarin. From the Dong people's perspective, "cun" is much larger than "zhai". Most of the time, "cun" is regarded as an administrative unit, while "zhai" is considered to be an economical or cultural area. The Dimen village consists of five naturally formed quarters: Wei, Mo, Yin, Mang and Mu (Fig.2-10).

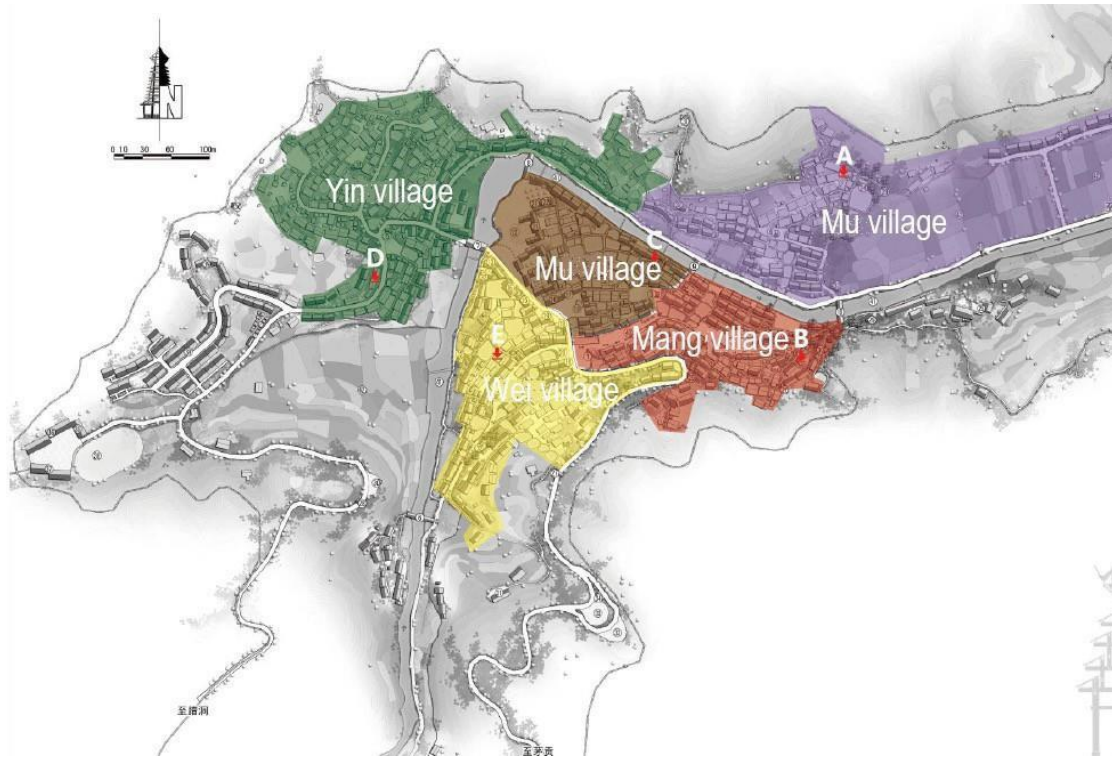


Fig. 2-10 the aerial view of Dimen

Similar to most of the other Dong villages, villagers in Dimen mainly live in ligneous *ganlan*-style buildings that consist of 2 or 3 floors. Most of the existing buildings are built in 1960s to 1970s since older ones are either neglected or destroyed in fire. Although the houses in Dimen village do not have overhanging roof eaves on every floor, like the houses in other Dong villages usually do, but the basic functions remain the same—this architectural style can be seen as a combination of both Han and Dong cultures. Most of the villagers in Dimen are still following the traditional customs in arranging their houses. For instance, the ground floor is used as storage or for keeping livestock; the second floor is the main dwelling sections that consist of living rooms and bedrooms; the top floor is used for storing grains.

There used to be five drum towers in the whole village, but now, only three are still standing in the village. The center drum tower, Qiansan, stands at the center of Dimen villages, the other two are standing in Mu village and Yin village respectively (Fig.2-11). All the village lanes are radiating from the Qiansan drum tower and forming a cobweb lane system that runs through the village. Most of the houses are built and arranged according to the changes in the terrains and along the rivers. Firebreaks can be easily spotted within every residential area.



Fig. 2-11 the distribution of drum-towers in Dimen villages

The five quarters are connected by five “Wind and Rain” bridges (Fig.2-12). Since Mu is where the first settlers founded Dimen, the ancestral temple, “Tanggong ci,” and the

Sasui altar were all built in the Mu quarter. There are also two opera stages built in Mu quarter and Yin quarter. Several other public spaces of special functions, such as the Ka house that is used for meetings, can also be found in Dimen village.

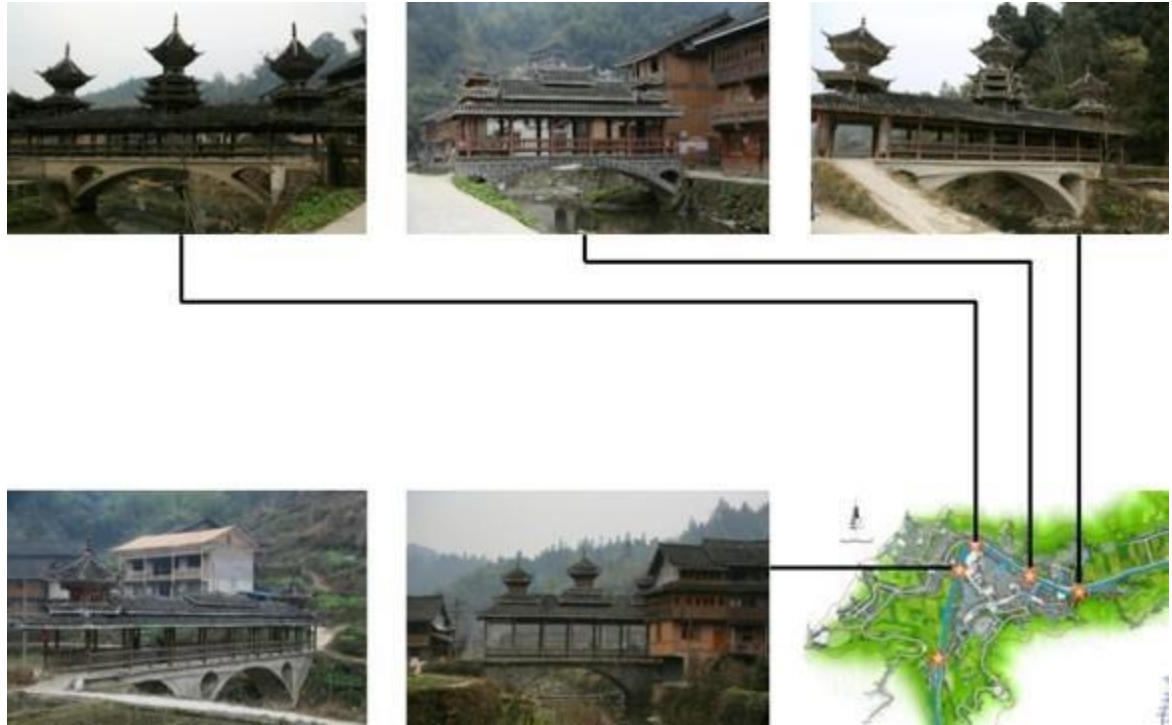


Fig. 2-12 the distribution of wind and rain bridges in Dimen

3.4 The Origin and History of Dimen Dong People

Today, only little historical documents that are related to the ethnic minority living in Guizhou province can be found. The Dimen village has been hiding deeply in the mountains and isolated from the outside world for centuries; hence, even fewer records can be found about this area. When I am trying to trace the history of Dimen village among the existing scholarships and literature, the most detailed record that I can find is *The History of Maogong District in Liping County* in which Dimen village is merely mentioned as follows:

During Southern Song Dynasty, in the years of Baoyou of the Lizong emperor (1253-1258), Maogong district was ruled by the chief of Rongjiangbahuang. In 1413, Liping was recognized as a new county and a government was established to rule the seven chiefs of Tanxi, Guzhou, Caodi, Hongzhouboli, Fuluyongcong and Xishanyangdong. The chief of Guzhou governed 10 villages, including Lutuan village, Tiantuan village, Gaochang village, Maodong village, Ladong village, Dimen village, Dengcen village, Luoda village and Chazhai village.

The above excerpt is the earliest record of Dimen village that can be found in an official historical record. When the Republic of China was found in 1912, the administration of the Liping followed the division in Qing Dynasty and was divided into four units: Xinyibao, Xiangnanbao, Xijingbao, Mingyibao, and the Dimen village belonged to Xijingbao. On Dec 26th, 1950, the communist army took over the Maogong district and the local administration that was used during the Republic of China was abolished. Instead, districts and townships were established and Maogong was the fourth district of Liping

County. Three townships were established under the Maogong district—the Maogong township, Lutuan township and Aizhong township. In the same year, these three townships were further divided into twelve small villages: Mao Gong village, Lutuan village, Jintuan village, Zhaitou village, Dimen village, Jitan village, Qizhai village, Aizhong village, Gaoyi village, Gong village, Darong village as well as Jiuzhao village. In 1956, the above-mentioned 12 small villages were reallocated into 7 larger villages.

The existing historical record of Dimen village cannot provide a chronological and continued overview of the administrative changes of the Dimen. Moreover, nothing is mentioned about its existence before the Song Dynasty. Dong people have no written form of their language, and most of their culture and history are passed down in songs. Their songs are the main records of their origins, reproductions, migration and major events in the Dong history. Despite the slight difference in the story, the story about the Dimen Dong's ancestors can be accounted as follow: During the Three Kingdoms Period (A.D. 220–280), the ancestors of Dimen Dong people lived in the Wu kingdom near the middle and downstream of Yangtze River, which is now in the southern Jiangsu province and Northern Zhejiang province. When Wu was defeated, they fled to several other areas before they had eventually settled down in Dimen. Therefore, the Dimen villagers believed that their ancestor Wu Shixiong and his three brothers, Wu Shilu, Wu Shide and Wu Shiming. A song called *Dimen Dong People's Ancestors Moved into the Village* mentioned that, “Lu, De, Ming and Xiong are our ancestors.”

The Wu ancestors used to live in Tianzhuyankou town and Rongjiang County. Later, due to their inabilities in adapting the climate and food, they chose to move again and

finally arrived at Dimen. They were pleased by the nice climate and sufficient resources

for cultivating plants and raising livestock and hence, decided to settle down. A slightly different version believes that the Wus began to migrate in Song Dynasty from Baishajing of the Taihe County in Jiangsu province, to Luling, Antang, then to Tianguyuankou town and Rongjiang County in Guizhou province before they finally arrived at Dimen village. They settled down in Dimen village, and strived hard to survive until and around 1300 families were formed later. However, the limited natural resources could no longer support the growing population. Therefore, some of the villagers moved to nearby areas and built other quarters. By the end of Ming Dynasty, 700 households moved to Maogong quarter; Ladong, Luoda and Dengcen quarter each received 100 households; and only 300 families remained in the original Dimen village. These consanguineous related villages were later named as “Qiansan quarters,” and the Dimen village became “the ancestor of Qiansan.” The Qiansan Festival is celebrated every three years, and on this day, residents from these quarters gather in Dimen village to worship their ancestors.

From the official records and folk songs, we can infer that the Dong ancestors probably started to move from Jiangxi province to Guizhou province during the Song Dynasty, and the Dimen village was gradually established between Song and Ming.

After interviewing some of the local residents and conducting a fieldwork in Dimen, I have learned that after Qing Dynasty, a group of Han people moved from Hunan province to Dimen village and were accepted by the locals after they agreed to change their family name to Wu and practice Dong customs. Even till now, nearly 98% of the villagers in Dimen are still using Wu as their surname. The small number of people whose family names are Li, Duan, Xu or Liu are descendants of later migrants who moved to Dimen during the time of Republic of China. These non-Wu villagers practice different customs

from the Dongs and speak both Kam and Mandarin. They also marry both Han people and Dong people from other areas. However, the Wu villagers always marry local people of the same last name. Even so, all of them are categorized as Dong ethnicity in official documents. Judging from the above-mentioned records, we can conclude that despite the remote settlement of the Dongs, the Han culture had certain degree of influence on their local cultures and self-recognition. The Dongs identify a man of Han ethnicity as their ancestor and inherited a Han family name shows their lost contact with their own origin of ethnicity and gradual assimilation with the Han culture. The variation in their legend about the migration of the Wu brothers also reflect the impact of Han migrants. Despite their continuous practicing of traditional customs and speaking of Kam language, their real history had been overshadowed by the Han culture.

4 The Formation and Evolution of Dimen Villages' Public Spaces

In general, Dimen village's public spatial form follows the same archetype as the general Dong village arrangement that we had discussed in Chapter 2. This reflects the uniform supply of natural resources, modes of production and similar social customs among the Dong area. These conditions also encourage the locals to maintain a similar living style and aesthetic in constructing their living space.

4.1 The Importance of Block As The Basic Public Space in Dimen Villages

The internal space of the Dimen village is divided into five main quarters and each quarter consist of various blocks. The blocks are the basic residential unit of the Dimen village and each of them is separated by numerous streets and lanes. Nearly all the residential buildings within a block are built facing the block streets; other symbolic buildings like the drum-tower are also constructed along the streets. Residents living in the same block directly interact and influence each other in various daily activities. As a result, the residents are unconsciously imitating and changing individual behaviors under the mass influence of their neighbors. Therefore, these blocks serve as basic public spatial form of Dimen village that allows to experience and perform uniform spatial behaviors.

4.1.1 The Architectural Archetype of Dimen Villages

Same as other Chinese local architectures that reflect the local topography, climate, history and building skills, Dong people's dwellings also follow specific archetypes that are

passed down by generations of Dong ancestors who settled in the same area for the past a thousand of years. However, the degrees of impact of the environmental and geographical conditions on the building materials, space arrangement and artistic designs are not entirely the same. For instance, the design of official buildings do not take as much consideration of the natural condition as residential buildings. When constructing an official building, an architect needs to focus more on reflecting the special functionality and symbolism of the building, and he can be less rational about choosing economical materials. On the other hand, official buildings are the embodiment of power and administrative functions; therefore their designs are bonded by a specific set of archetypes to ensure the display of hierarchy and symbolism. In comparison, despite being restricted by the environmental conditions and economics of materials, residential houses are much more flexible in designing its outer appearance and decorations, and thus there is a greater chance of encountering a residential building that follows a spontaneous design. When analyzing the reasons behind a local's certain choice of architectural archetypes for his building, I need to consider from two perspectives: rational reasons and contingent reasons.

The rational choice of archetype emphasizes mainly on suiting the surrounding environment and using the most economical materials to save on the cost. In the case of Dong's choice of *ganlan*-style houses, wood is the deciding factor. As I have argued in the previous chapters, Dong area has luxuriant fir forest and hence, it is the most rational choice to use wood as the major building material. However, cutting and transporting long pieces of logs within a hilly area is not an easy and economical task (Fig.2-13). Therefore,

we seldom see tall wooden buildings that require long wood logs to build in Dong village, and every residential house usually has a uniform height (Fig.2.14).

The individual measurement and internal structure of every residential house also reflect the locals' rational awareness of geographical restriction and public spacing. The spacing and structural archetype of residential houses are usually measured and allocated after considering the condition of the entire neighborhood and surrounding environment, such as the steepness of the ground, the required height and amount of sunshine in the daytime, to maximize its utility and building efficiency. Besides, residential houses also need to allocate passages for residents to pass and enough space to minimize fire hazards. There is no denying that this separately built but generally integrated public space is directly related to the minimal elements of buildings.



Fig.2-13 Building material-wood



Fig.2-14 houses of uniform height

4.1.2 The Formation Mechanism of The Residential Block

Every block is formed by a group of residential Dong stilt houses—they are the most fundamental and essential element to complete the spatial formation and layout of the Dong village. The spatial behavior and organization of each building within a block is the

manifestation of the residents' daily life-style and social practice which bears the symbols

of Dong's ethnic customs. Therefore, a building's characteristic does not only demonstrate Dong people's living condition and aesthetics, but also influence the entire spatial formation of a Dong village.

A standard *ganlan*-style house in the Dimen Dong village is supported by external eave posts and internal supporting posts; the space between the *yanzhu* and the internal posts is an open hallway which runs through the four sides of the house, and it is usually used as the main social space; the internal layout of the house consists of three big rooms and two small rooms. Walking into the center room, a fire pit is sitting right in the middle for cooking or warming; many older Dong people still keep the habit of squatting or sitting on low benches around the fire during meals. The second and the third room big room are usually bedrooms. The wooden staircase that connects the various stories is straight flight. Based on this general layout, different family may adjust the arrangement and structures according to their specific needs and size of the household. The flat layout also changes according to the house's geographical position and the space limitation. However, the altered flat layout seldom changes in length, but only differs in the width—the residents usually expand more rooms on the two ends but rarely add space on the front or the back of the house. Villagers usually have two options—they can either add wings on the two ends of the main building, or construct overhanging rooms on the upper floor so as to achieve bigger space without enlarging the floor space. The newly built space in the mid air can face the hill or the back. Most of the roofs are steep overhanging roofs and a few are saddle roofs (Fig.2-15).

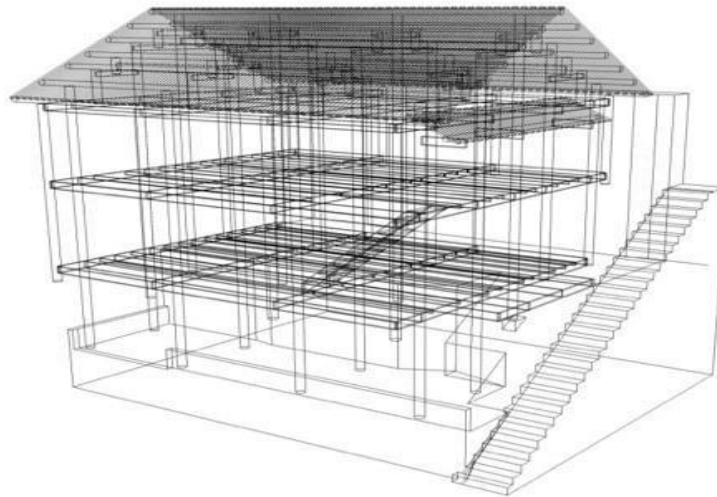


Fig.2-15 (1) (2) (3) The form of roof

In the following section, I have selected a few houses are built with different layout plans as case studies. The first dwelling is located in Mang village built against a hillside. Standing on the second floor of this house, you can overlook the whole village's landscape (Fig.2-16). Below is the first building's floor plan (Fig.2-17) and the perspective (Fig.2-18).



Fig.2-16 (1) A photo of the actual



(2) The perspective of a building structure

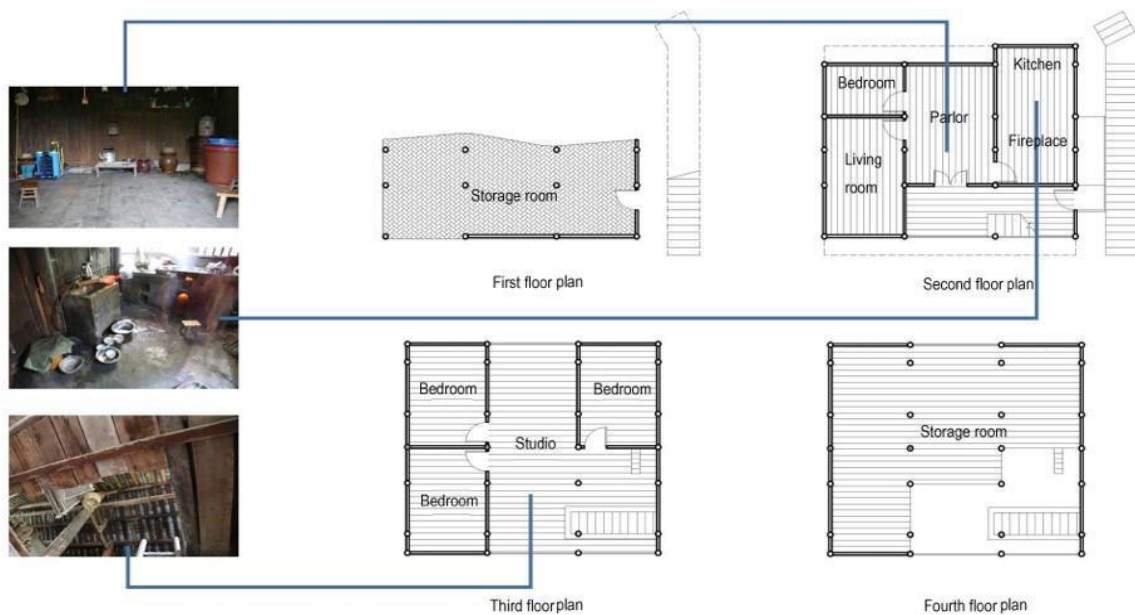


Fig.2-17 The plan and its real

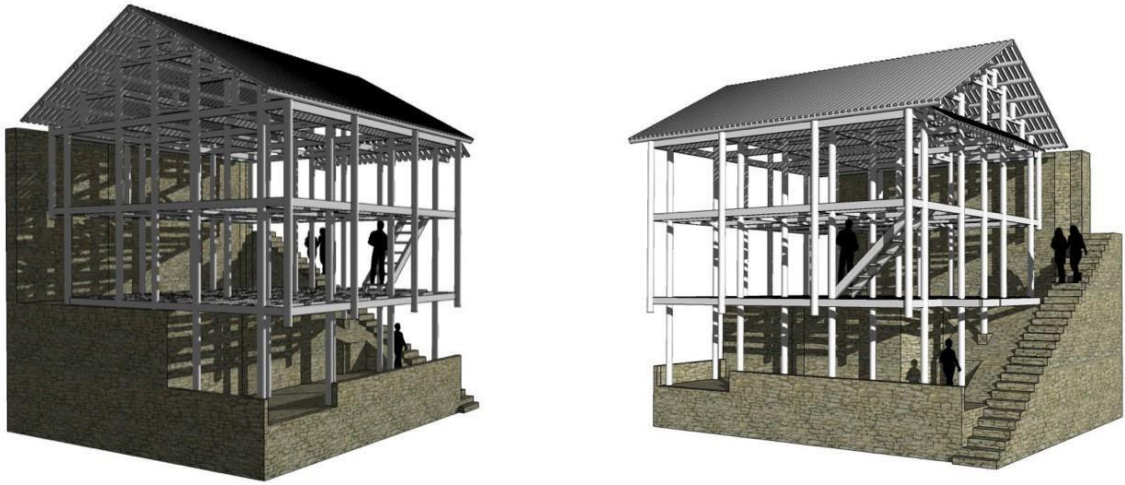


Fig.2-18 (1) (2) The integrated perspective of a building's structure and its location

The second building is built along a river in Mu village. The building enjoys ventilation due to its location on an open and wide flatland (Fig.2-19). Below is the Second building's flat plan (Fig.2-20) and structural model (Fig.2-21).



Fig.2-19 A specific house model



Fig.2-20 The plane and its real building

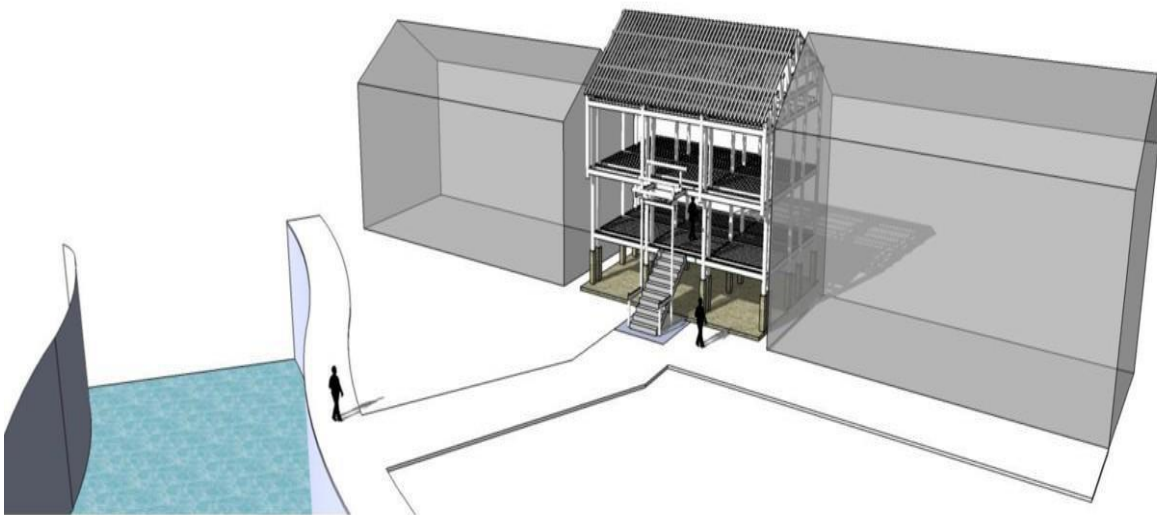
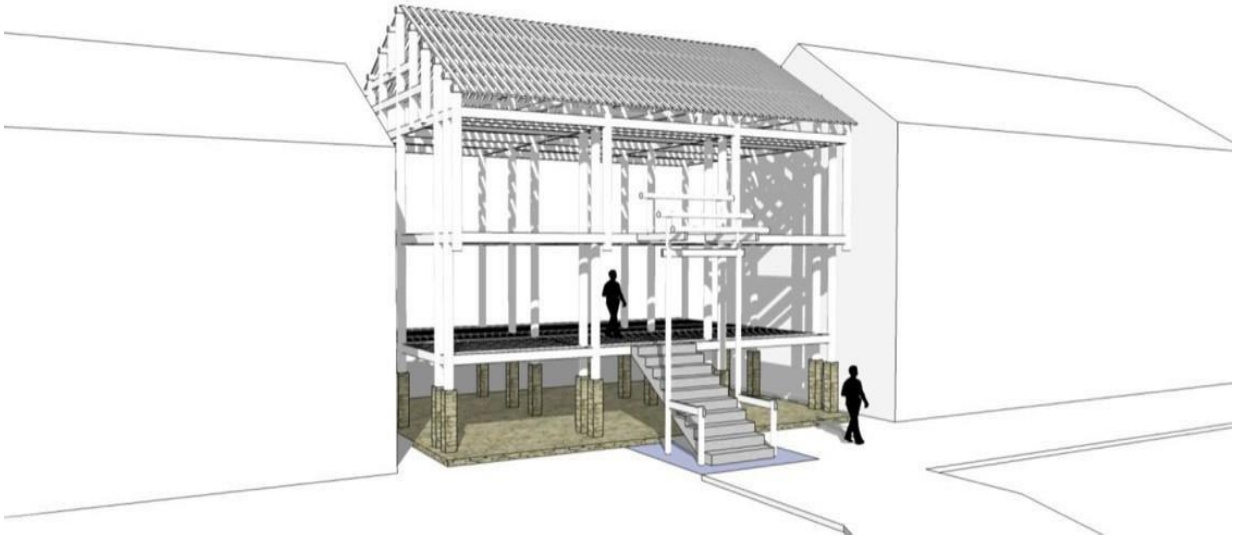
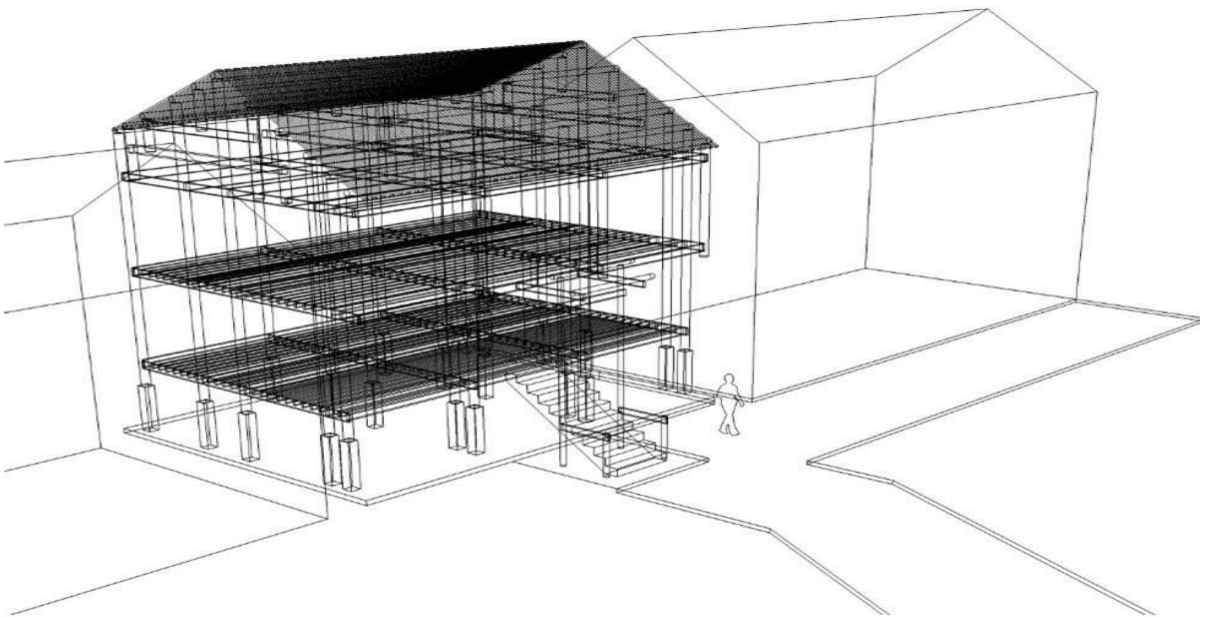


Fig.2-21 (1) House and yard model



(2) The perspective of a building structure



(3) The perspective of a building structure

The third building is in Yin village. Same as the first one, it was built on a slope with the back against the hillside. The building space is designed based on the specific landform. Standing on the second floor, you can feast your eyes on the lavish landscape of the village (Fig.2-22). Below is the Third building's floor plan (Fig.2-23) and perspective drawing (Fig.2-24).



Fig. 2-22 A specific house model

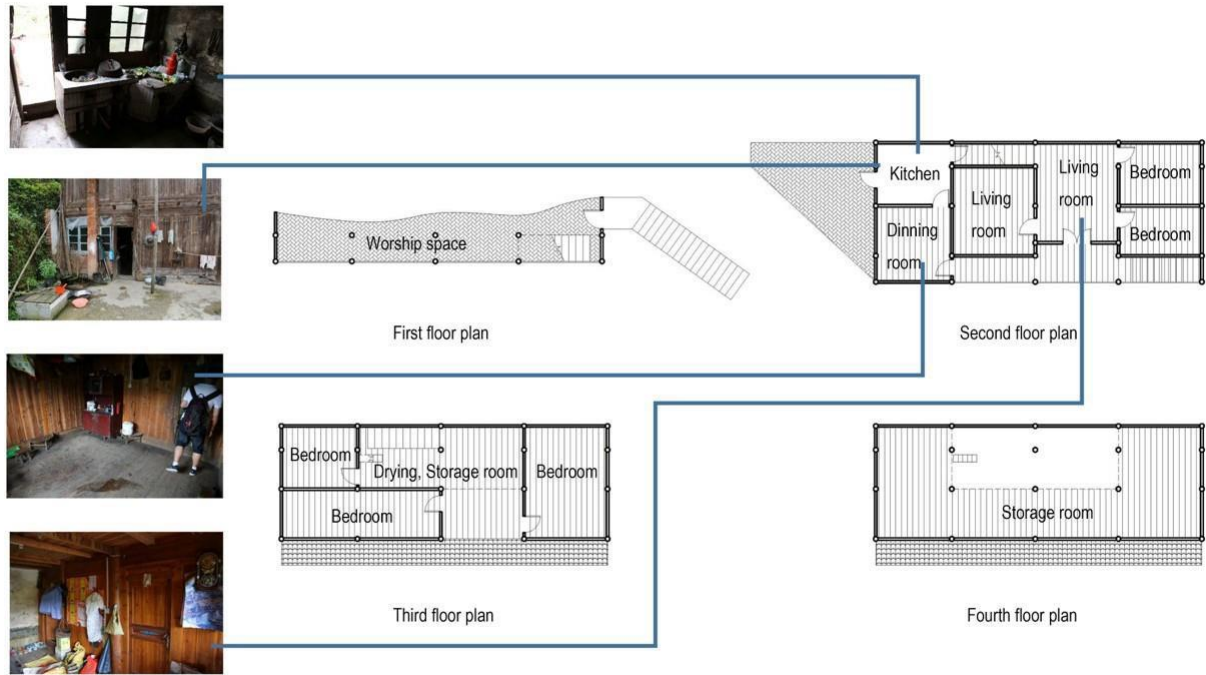


Fig.2-23 The plane and its real building

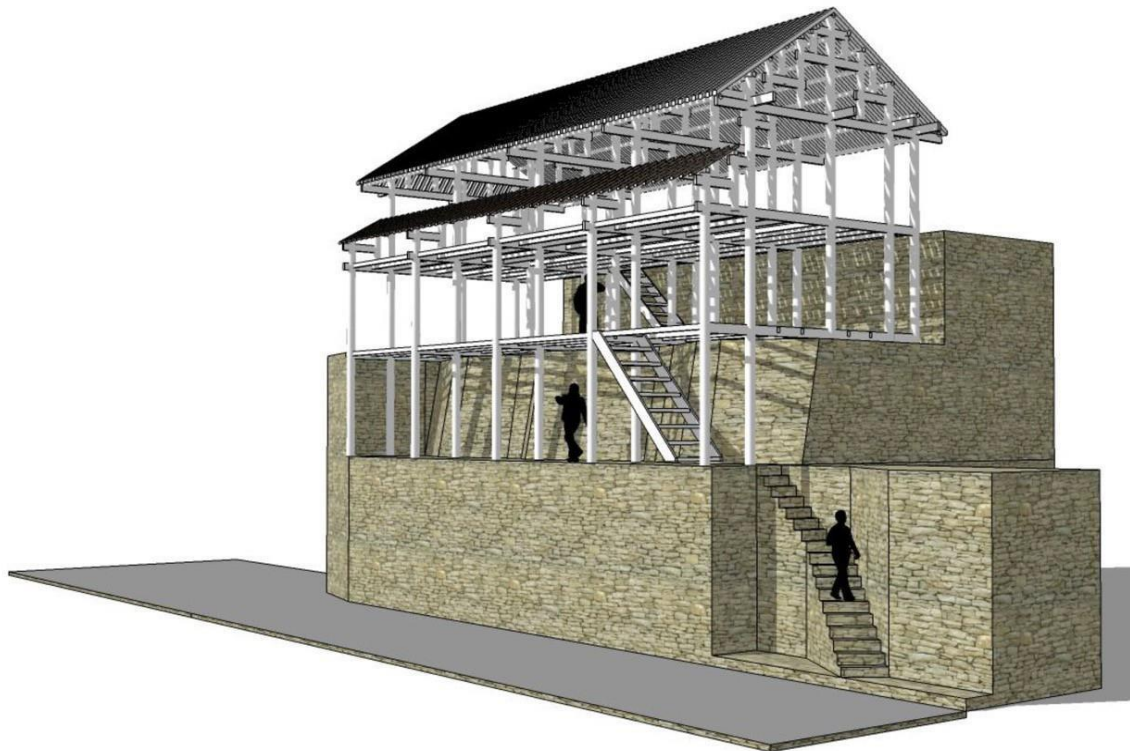


Fig.2-24 The perspective of a building structure

The fourth one is in Wei village (2-25). Similar to the second one, it was built in a flatland. There is a pond right outside the house, which is beneficial not only for the climate, but also serves as a good fire prevention. Below is the fourth building's floor plan (Fig.2-26) and perspective drawing (Fig.2-57)

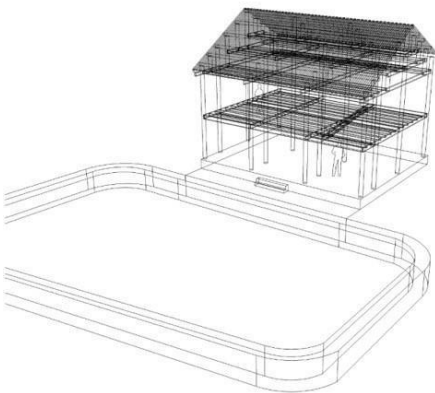


Fig.2-25 (1) A specific house model (2) The perspective of a building structure (3) location

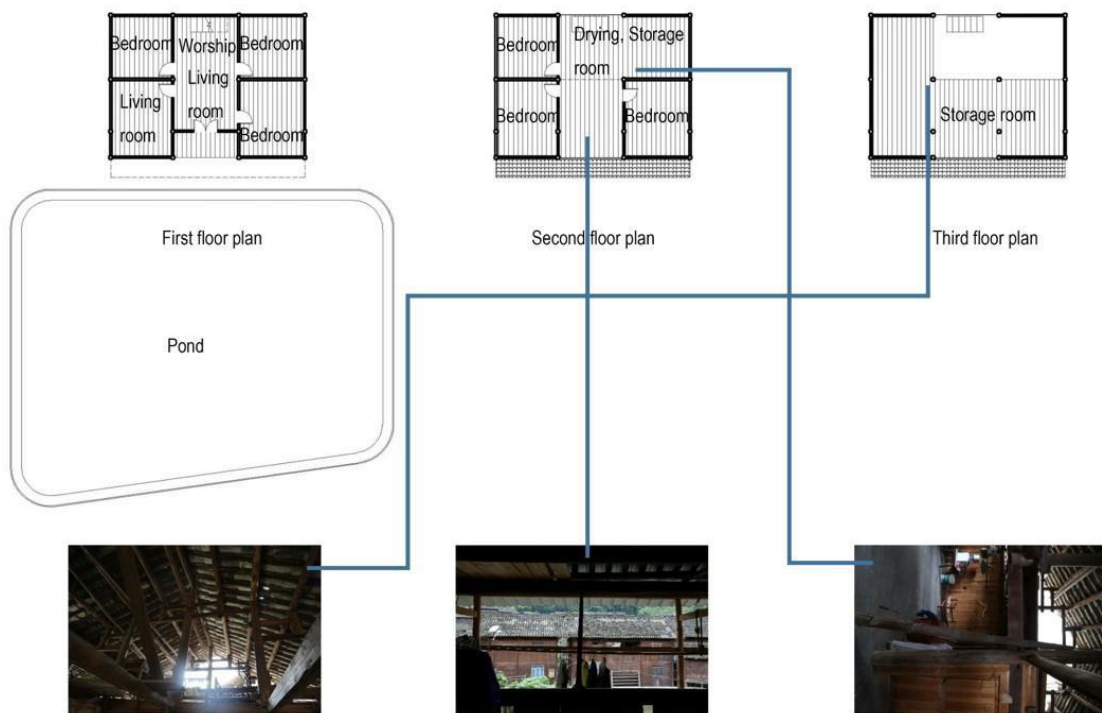


Fig.2-26 The plane and its real building

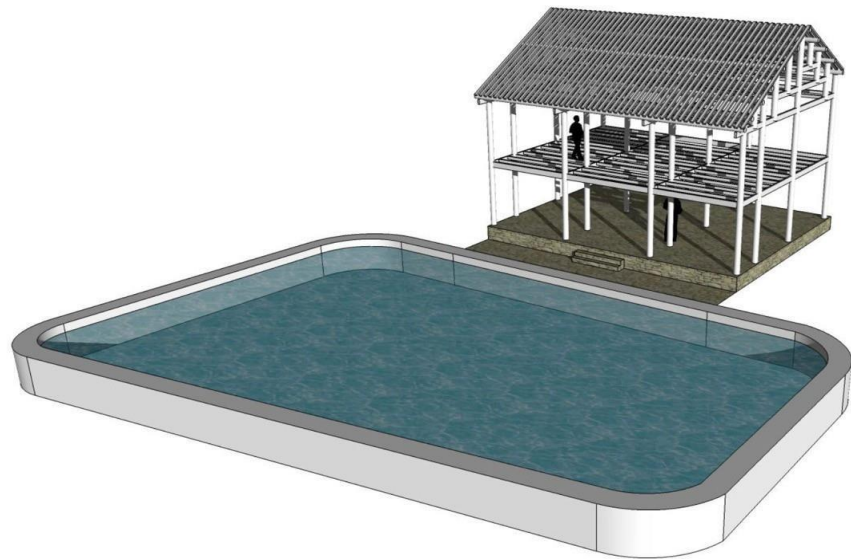


Fig.2-27 The integrated perspective of a building's structure and its location

By analyzing Dong people's buildings, we can conclude that the following two features of a Dong house in Dimen village: first, almost all stairs are built on the flank of the building. second, the loggia is built along the side of the building that faces the street and surround the inner rooms in the center; as a result, the open loggia serves as a semi-public space that discourages any blockage; thus, Dong people are cautious about the spacing and orientation when building their own houses to ensure the open view from the loggia in both their own's and neighbor's house. This consideration leads us to the particular formation mechanism of various blocks that are made up of individual residential houses. The way of connecting with other houses and arranging the buildings along the street directly affects the formation of a single block. More interestingly, the village layout is also fitting into the theory of Kevin Lynch's study of urban image. In his groundbreaking book, *The Image of the City*, Lynch states that there are five elements in a city that helps to form a mental map for any visitors. In my opinion, the four main mechanisms that are working on the formation of the Dimen village coincide with the five elements:

Linear Mechanism

The most common and traditional way of arranging the houses is to align them along the streets or streams, or follow the changing gradients of the hilly land. As I have discussed in the previous chapters, all the streets within a block are radiating out from the central drum tower. Since most of the older buildings in Dimen village are arranged this way, we can see a very clear cobweb pattern if we are overlooking the entire the block from a drum tower.

Landmarks As Connecting Nodes

Since each block is the basic unit of a larger community within the village, there is always a reference point that are used as the public space and connecting nodes that joins all the different sections within the village. The most important and symbolic landmarks, are the drum towers and the “wind and rain” bridge. Drum tower is always situated in village’s center, while rain and wind bridge is in village’s entrance. The drum towers are usually the tallest buildings within each quarter and marks the central of where all the blocks and streets are branching out. The drum towers also serve as the meeting place for events and celebrations, as well as the watching tower and warning alarm for any hazards. The “wind and rain” or the flower bridges are the major transportation nodes and social space of the residents. The five quarters of the Dimen village are connected through these covered and lavishly decorated bridges. Each bridge usually consist of a long passage for walking and benches along the sides for sitting

Independent Mechanism

A single building that stands on its own and the only connected external buildings are its utility rooms, shed for livestock or storage. This type of independent buildings are more common near the edges of Dimen village and in villages that are located among the hills. Some residents also prefer this kind of house when they are building new ones to separate from the original building.

Unrestricted Mechanism

Despite the similar layout among most of the blocks, there are also a number of buildings that do not follow the general pattern. This uncommon and unrestricted building arrangement usually exist around the independent buildings that I have

mentioned earlier. Instead of aligning to a specific street or contour, these buildings are usually surrounded by free spaces or courtyards. This formation mechanism is very crucial for the future development of the village, since it gives room for new buildings and expansion. The traditional linear distribution of the buildings within a block is tightly knitted into the complete layout and hence, is lack of flexibility in accepting new architectures. The unrestricted new building arrangement allows future residents to expand according to their specific need and economic conditions. As long as the new building are still keeping to the original architecture design and outer appearance, this new formation of building blocks will not conflict with the completeness and uniformity of the traditional Dimen village.

4.2 The Form of Spatial Nodes within Dimen Villages

Node space is the most popular space form in Dong area, also, in Dimen villages. The node space can be divided into two categories. The first category includes large-scale buildings such as like drum towers, drama stages; Another category includes is small-scale constructions such as the village gates, grain-drying racks and Sasui altars.

4.2.1 The “Rain and Wind” Bridge

The “rain and wind” bridge, also known as the flower bridge, is one of the most representative traditional architectures of Dong village. Their elaborate decorations and complex structures reflect the highest construction skills and aesthetics of the Dongs. At the same time, these bridges serve as the most important public spatial nodes that connect individual quarters of the Dimen village. As I have mentioned earlier, there used to be five

flower bridges in Dimen village that include the Wei village flower bridge, Rain and Wind Bridge, Xiangyang Bridge, Shuangfeng Bridge and Shanglong Bridge in Yi village (fig.2-28). They were built across the Qiansan River and provide passages and resting stops for the villagers travelling between various quarters. The flower bridges also carry superstitious symbolism such as the connection of good fortunes that are otherwise cut off by the rivers.



Fig.2-28 (1) (2) (3) (4) (5) Wind and rain bridge

These bridges usually consist of three parts: the black piers and bridge passages that are built by bricks and wood structure pavilions or towers; thus each of them is a combination of three types of architectures. Bamboo railings are embedded along both sides of the passage. Since all the flower bridges are covered, the rooftop structure is another special feature. These overhanging roofs are usually single-tiered or multiple-tiers and covered with grey tiles. Colorful paintings about the Dong people's life, legends or beasts and birds are used to decorate the supporting beams below the ceilings (fig.2-29). On top of the roof, tall towers or pavilions are built to showcase the extravagant architectural design and construction skills. Due to several fire hazards and other destruction throughout the time, only three of the five original main bridges are still in use. Some of the newer and rebuilt bridges are even strong enough to pass cars. Their functions demonstrate the villagers' continuity of traditional architectural skills and connection with public spaces.





Fig.2-29 (1) (2) (3) (4) (5) (6) The drawings in the wind ad rain bridge

4.2.2 The Drum Towers

Drum tower is no doubt the most important and symbolic public building that embodies all the unique characteristics of the Dong ethnicity. Although in modern days, its function as the general meeting space of the Dong clans has been weakened, villagers still gather around the towers for other social purpose such as celebrations of traditional festivals and major events. A tower is usually supported by 8 main column on the ground floor which form an open space similar to the ground floor of a stilt house; at the center, a stone fire pit is kept for special events.

As I have argued in the previous chapters, constructing tall buildings in a mountain area is extremely difficult and costly. Therefore, judging from the splendid ornaments, complex building structure and incomparable height of a drum tower, we can conclude that this public building occupies the utmost important position of the entire village. In order to build the centripetal and tall structures of a drum tower, the entire village have to work together to complete this task. This is also the reason that after so many years have passed since most of the original five towers were destroyed, only two were completely restored.

Standing tall and overlooking the entire village, the drum tower's public function ranges from meeting spot for public affairs, watching tower, alarm system, reference point of the village's orientation as well as cultural symbol. The importance of a drum tower in a Dong village is beyond description. Beside being educated about the past history and the customs of treating the drum tower as the center of the village, the modern villagers are developing new functions and social activities to reinforce its superior function as the public center. For example, every now and then, the villagers would gather around the wooden television cabinet that is placed outside the entrance of the drum tower to watch TV programs; in other days, tourists and visitors from all around the world also pay their visits to this symbolic building, which even further extend its publicity beyond the village.

Since "when there are big events needing discussion, legal affairs, or fights against outside invasion, all villagers are called to get together here," the drum tower represents the center of power and symbolizes the villagers' cultural attachment to the village. The archetypes of a drum tower is passed down through generations of Dong carpenters and architects who have expressed their highest ideologies and building skills through them. This contributes to the complexity of the building materials, structures and ornaments of the tower. Despite the changing political structures and public affairs within the Dong village, the tower still maintains its utmost superiority among all the public buildings. In the previous research, I have mentioned that among the ancient five drum towers, only three are still remain standing in the Dimen village, of which the biggest is the Qiansan drum tower (fig.2-30). It is located in the entrance of Mang village on a flat and open space for the convenience of visiting and gathering. Local residents informed me that the current Qiansan drum tower not the original one. It has been reconstructed in accordance to the

Han understanding of *feng shui* (good fortune). This reveals the gradual impact of the Han culture on the Dong settlement. Nevertheless, the main functions and symbolism of the drum tower remains unchanged. Especially when celebrating the Qiansan Happy Reunion Festival, which is also known as the Ancestor Worship Festival, the villagers from all various quarters would gather around this tower.



Fig.2-30 The Qiansan Drum Tower

Another old drum tower is located in Mu village (fig.2-31). Mu village is the first quarter settled in the Dimen area and is always treated as the origins of the whole Dimen village. Its drum tower is 17.5 meters tall and consists of an enormous 8-tiers hexagon roof. Despite its elaborate vertical structure, its base is much smaller in comparison to the Qiansan drum tower. A massive numbers of paintings about bullfight can be found on the interior beams of the tower. Although real bullfightings are no longer organized in the

Dimen village, these paintings still reveal the past glories of this event. The third drum tower is located in Yin village and restored in 2015 (fig.2-32).



Fig.2-31 The drum tower in Mu village



Fig.2-32 The drum tower in Yin village

4.2.3 Village Gate, Drama Stage And The Tanggong Temple

In comparison to the other Dong villages, a unique feature of Dimen village is its village gate that guards the only main entrance (fig.2-33). However, since this gate can neither be closed or locked, the only function of this gate is to draw a symbolic boundary for the village space.

The drama stages make up another unique component of the Dong village's public space. Similar to the flower bridges and drum towers, there used to be five main stages that each located in the respective five quarters. Nowadays, only two are remaining. One of them is located in the Yin village and it has totally lost its function as a stage but is turned into a storage (fig.2-34). On the other hand, it occasionally serves as the alternative for meeting spot when the drum tower is not accessible. The stage is also a stilt building

that stands on wood columns. The upper level is laid with flat boards and serve as the main stage.



Fig.2-33 The font Gate of Dimen village

The other drama stage located in the Mu quarter has been rebuilt and owned by local government and is enlarged and well decorated. This Qiansan drama stage (fig.2-35) is able to maintain its traditional function on which occasional major cultural and sport events, performance, as well as important meetings are held around this stage.



Fig.2-34 The drama stage in Yin



Fig.2-35 The drama stage in Mu village

Another major public building that is worth mentioning, is the Tanggong Temple (fig.2-36). Tanggong is the legendary guarding god who had passed knowledge to the Dong ancestors and blessed the harvest of the Dong area. According to the legend, after Tanggong had passed away, his spirit appeared in the chief's dream and choose a spot beside a pond for his burial; hence the Dongs built a temple at this location to commemorate. The Tanggong Temple is also a typical *ganlan*-style house that consists of three rooms; the memorial tablet of Tanggong is placed in the central room. Tanggong, is the common god who symbolizes peace, prosperity and fertility and worshiped by all villagers in Dimen.



Fig.2-36 Tanggong Temple

The Sasui altar is another religious public construction that stands beside the Tanggong Temple. However, the younger Dong people nowadays seldom recite the story of Sasui or worship her. As the religious power of worshipping Sasui has been weakened over the past few decades, it is turned into a protected heritage and tourist spot.

4.3 Other Essential Components Forming The Integral Space Of Dimen Village's

Besides the iconic public buildings such as the drum towers, flower bridges and the drama stages, there are plenty other spatial components and infrastructures around the Dimen village that are worth mentioning. These components scatter among the symbolic main buildings and residential houses; together, they form the complete integral space of the Dimen village. Hence, the following chapters will focus on spatial components such the water system, green lands as well as public facilities within the Dimen village.

4.3.1 Green Lands

Green lands in Dimen village include the natural vegetation and farmlands that can be found within the five quarters. Villagers living in Dimen construct their settlements against the luxuriant hillsides and cultivate large area of rice fields around their houses. Moreover, the village's wooden architectures also seamlessly fit into the lavish greenery and achieve a very harmonious balance between the human world and the Nature (fig.2-37). Therefore, the vegetation is the best background and natural decoration of the Dimen village and nurture the village with its abundant natural resources.



Fig.2-37 (1) (2) The green land, farmland and river in Dimen village

4.3.2 The Waters in Dimen Villages

When the Dong people's ancestors first arrived in Dimen, the luxuriant vegetation and abundant water resource had grabbed their heart. As I have mentioned in the previous chapters, Dong people named this place Dimen because it has "non-stoppable flow of water." For an ethnic minority that still rely on primitive agriculture for self-sufficiency, the importance of clean water source is beyond description. The Dimen village is surrounded by natural waters such as rivers and streams, and man-made water sceneries including fish ponds, pools, wells and canals. The abundant, unpolluted and steady flow of water in Dimen area guarantees the Dong people's living and farming. Therefore, saving and protecting the water resources are the utmost issue in Dimen. At the same time, the natural clear streams, flowing rivers and smooth artificial ponds surrounding Dong villages also create a lively and refreshing scenery for the Dimen environment. Moreover, the waters are playing an important role in connecting the public spaces in Dong villages. (Fig.2-38)



Fig.2-38 Dimen villages' water system connecting the public spaces

The rivers and streams running through the village have huge influences on the public spatial forms. Although the various quarters are naturally separated by the rivers, it also encourages the construction of the representative flower bridges which eventually turn into the local landmarks. While passing and meeting on the bridges, the villagers are also able to indulge in the beautiful river sceneries. Therefore, the waters are not only the essential resources for the villagers' daily life, they also contribute to the beauty and variety of architecture within the village.

River banks are also important components of the public space because many of the village buildings are arranged along the river and facing the water; thus similar to the streets in a block, the river banks also serve as the grid lines for the alignment of the houses and play a crucial role in complete the village layout. Furthermore, traditional river banks in Dong villages are built with layers of rocks. In comparison to the modern river banks that are built with those steels and concretes, the traditional rock banks blend better into the natural environment and display a sense of rustic beauty.

In the previous chapters, I have repeatedly emphasized the importance of the prevention of fire in the Dong village and water is no doubt the most essential element in the precautions. A large number of ponds of various sizes are built around the highly concentrated village. These ponds are not only essential when a fire breaks out, they also help in controlling the spacing among dense residential areas and creating more scenic spots for the residents.

Wells are also common facilities that can be found in a Dong village. Since most of the wells were built as early as in the Ming dynasty, they are valuable historical heritage that add great values to the local culture.

Canals are also built in large numbers for irrigation. The newly built canals are paved with cement which are not very efficient in keeping the silts to allow surface water seeping into the soil; at the same time, their appearances are unable to match with the surrounding greenery. The traditional canals that are built with pebbles are much more suitable for the irrigation system; the small fit into the environment. (Fig.2-39)

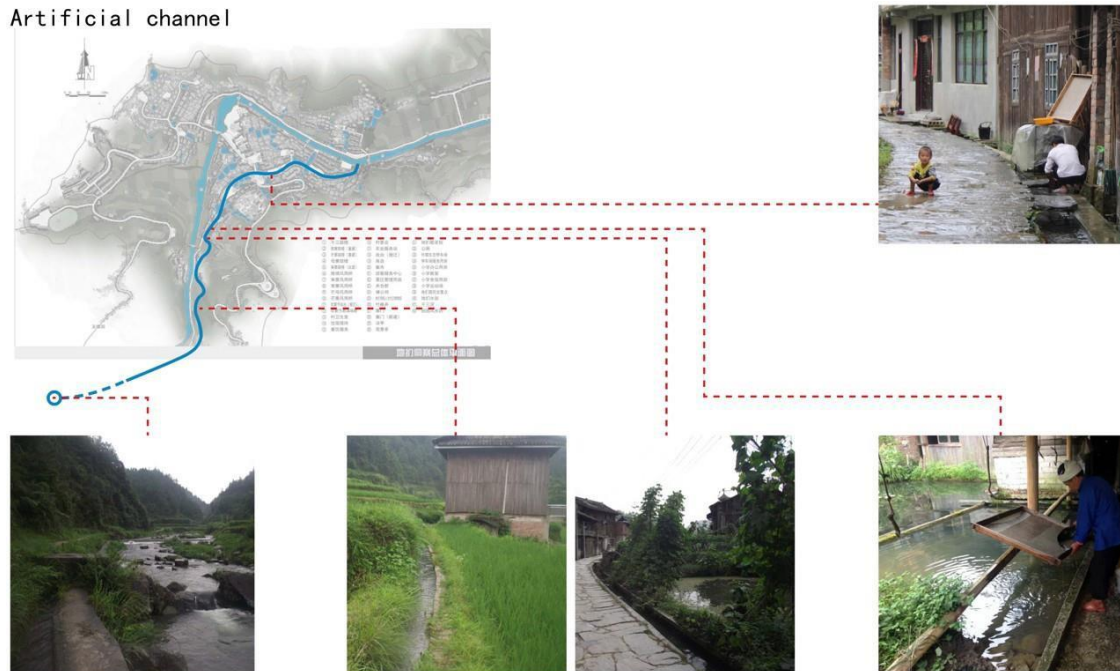


Fig.2-39 Canals play an important role in Dimen villages' public space

4.3.3 Education and Health Care

In modern time, the variety of facilities also enrich the basic infrastructures of the village. Facilities and institutions such as schools and hospitals have been appearing in the Dimen village throughout the past few decades. Due to the mountainous topography of the Dimen area, constructing modern brick buildings is a difficult task; hence many infrastructures and facilities are still underdeveloped. However, the villagers and local government understand the importance of education; hence despite the harsh conditions, they managed to construct the Dimen primary school between Yi quarter and Mo quarter for all the children (fig.2-40). The establishment of schools is a drastic innovation of the traditional infrastructure of the village. It also encourages greater flow of people moving between the quarters. The growth of traffic also cause certain impact on the spatial formation of the surrounding streets.



Fig.2-40 The entrance to Dimen Primary School

Clinic is another indispensable facility in Dimen village. A small-scaled clinic is built next to the flower bridge in Yin village (fig.2-41). Unlike the school which is built with bricks and concretes, the clinic is a wood structure building that is divided into two sections: the wards and the treatment area. Its wooden appearance allows it to blend into the older buildings.



Fig.2-41 (1) (2) Dimen village's clinic

4.4 Conclusion

My research on the public space in Dimen villages is mainly focusing on analyzing the architectures that are still functional and making reference to the existing scholarship. However, there are more issues regarding the innovative adjustment to the existing infrastructure to suit the modern time, as well as consider the possibilities of future development. Western ideology and understanding of settlement also causing an impact on our current research on Chinese ethnic dwelling cultures. For example, a Chinese urban dweller's understanding and definition of a square (*guangchang* 广场) is very different from those of an Italian who lives in a small town. In Italy, a small open space surrounded by several buildings can be considered a square, and it is a common place for leisure activities and gatherings. However, the Chinese only consider an especially constructed field of large dimension as a square, and it usually has a political symbolism. Similarly, public space of an ethnic village is undergoing certain changes in its definition, symbolism and cultural values. The rapid pace of new rural construction and urbanization that is gradually invading the tradition territories of ethnic minority, which also alerts us to reconsider the balance between modernization and keeping cultural heritage. The research in this chapter aims to figure out what we can inherit from the heritage of Dong's settlement to cope with the future development.

The investigation of Dimen village is very encouraging in showing how the villagers manage to preserve most of their traditional spatial components and infrastructures, such as the drum towers, flower bridges, village gate as well as drama stage. The formation mechanism of Dimen public space is maintained and continues to create an impact on new

constructional activities. At the same time, modern infrastructures are also working with the traditional formation mechanism in making transformation of the traditional public spaces. By considering these factors, our findings will not only shed a new light on the current scholarship regarding the preservation of Dong's settlement, but also provide innovative ideas for the future development of the village.

In recent years, local government puts great efforts on preserving heritage and the surrounding landscapes which results in dilemmas when planning and developing an area: In rural areas that rich heritages can be found, other developments and urbanization are restricted to give space for these heritages which results in underdevelopment of these areas. However, if an area that no valuable cultural heritage or landscape can be found, overdevelopment and exploitation of local resources are not controlled. These phenomenons can create even bigger problems if the local government are not caution in their preservation actions. For instance, since most of the local heritages become the tourist and research attractions, lacking of efficient schemes for maintenance may deteriorate the conditions of these sites. In another instance, an area that depends solely on keeping heritages but have no other plan or support in the local economy may greatly affect the living conditions and incomes of the locals. By only funding the preservation actions of the heritage but no matching development of local infrastructures and tourism, these valuable heritages will eventually become the burden of local government and economy.

In the case of Dimen village, issues in preserving local heritage also become crucial for both the local government and the residents. Due to the growth of population, new houses and residential space have been constantly developed within or around the

original village. However, younger architects and residents are gradually losing their attachment to the older archetypes and their understanding of building materials and skills are also varied from the older generation. New villagers do not stick to traditional materials such as wood, but choose cheaper and more common man-made materials such as bricks and concretes. Many villagers also feel that houses made up of bricks are not afraid of fire, hence most of the newly constructed houses choose the original woods' framework. As a result, the uniformity of the old wooden buildings is interrupted by the new buildings. In order to keep the original harmonious look of the landscape, one of the solutions that the local government has adopted is to enforce the villagers to cover their brick houses with artificial wooden boards. However, the artificial texture and color of the boards are unlikely to retain the traditional look of the older buildings. Furthermore, this project adds unnecessary construction costs to the villagers and the government does not provide any subsidy.

In another instance, there are not enough space along the original streets for the new houses to align with the other buildings, hence some villagers have occupied part of the streets to fit in their new buildings. As a result, a number of tall, protruding brick houses can be seen along the block streets that not only seriously disrupt the alignment of the original buildings, but partially block the sunlight as well. Some of the villagers even illegally extended their houses onto the farmlands. The government forcefully stops the construction but has no further actions of assisting in the demolition or relocation of these incomplete buildings. Most of them are still left standing in the farmland.

These incidents reflect that both the government and the residents do not possess adequate knowledge and understanding of how to efficiently preserve local heritage. The

government only wants to maintain the look of the local landscape without sparing a thought for the economical burden of the residents or providing subsidy. The younger Dong villagers are losing their emotional attachment to their own culture and lacking of related education on the importance of preserving their ethnic living space. As a result, the preservation project of Dimen area is not effective and efficient.

There are two main problems caused by the future construction actions in Dimen village: Firstly, what is the relation between the newly built houses and existing public space? Secondly, how does the newly developed dwellings maintain and fit into the original public space?

Both these questions can only be solved if the government and the local people can better understand and appreciate the local cultures and develop more practical preservation plans. The government needs to first provide necessary funding and subsidy to encourage the villagers adopting original archetypes in building new houses; secondly, the scholars and researchers should organize frequent education programs for the locals to learn about the importance of protecting their own cultural heritage; moreover, it is also very crucial for the designers and architects to make necessary adjustment and improvement of the original archetypes to reduce the building cost as well as enhance the fire-safety of wooden buildings.

The beauty of Dimen villages' public space is formed through a long period of experiments and modification. Considering the transformation of modern aesthetics, technology as well as the dwellers' changing needs and economic status, the same archetype may not be able to cope as time goes by. An effective and enduring planning for public space should leave some rooms for future adjustment and unforeseen innovations.

With the support of new technology and research, new building materials can also achieve the public uniformity of the old buildings and at the same time, improve the living standards and economy development of the locals.

5 Analysis Of The Relationship Between The Public Life And The Public Space of Dimen Dong Village

The social custom, life-style and common practice in the Dimen Dong village is a miniature of the general Qiandongnan culture. An architect should pay more attention to how the people utilize the public space for specific activities to decide on the best plan and configuration of this space. Although these factors may be easily realized in a short time, they are very significant in the long-term experience of using a space.

5.1 Dimen Dong Village's Public Activities and Their Influences on the Public Space

When I was visiting the Dimen village, I was impressed by the intimate relationship between most of the villagers. I often encounter groups of children and adults playing and chatting in laughters. Villagers greeted everybody whom they saw on the street. These villagers always spend their times in groups, even when they are working in the field or making handicrafts. This has further reflect the importance of public spaces because the public interactions make up the utmost significant part of a villager's daily life (Fig.2-42).



Fig.2-42(1) Sticking pig on the road



(2) Children are playing in the river



(3) Wood processing in a drum tower



(4) Wash clothes by the river

5.1.1 The Various Types of Activities In The Dimen Dong Village

According to Jan Gehl's *Life between Buildings*, activities happening in public spaces can be divided into three categories: necessity activities, spontaneity activities as well as intercourse activities. These three types' activities have different requirements for the physical environment. Using this theory, I will analyze the corresponding activities in Dimen Dong village.

Necessity activities include involuntary and mundane activities such as going to school, waiting for buses and waiting for friends. They are also the activities that nearly all the villagers need to participate in certain stage of their lives. In Dimen village, some of the common necessity activities include children going to schools, adults working in the field, making handicrafts for sale. These activities occupy the majority of the villagers' daily lives and they are only interrupted by serious natural or human disasters.

Spontaneity activities are voluntary activities that people choose to participate during a specific time. For example, people may spontaneously gather and chat in the field or in front of a shop during break times (fig.2-43). These activities can be interrupted for various reasons such as bad weather, mood and time. Jan Gehl believes that in a bad weather or uncomfortable space, people only carry out necessity activity; whereas a good weather and comfortable outdoor space will encourage more spontaneous activities.



Fig.2-43(1) Villagers are talking before a shop



(2) Chatting on the bridge

Villagers living in Dimen also enjoy more spontaneous activities when there is sufficient and comfortable public space. However, due to the general low living conditions in Dimen villagers, the degree of comfort may not meet our common standard. For instance, sitting on the doorstep of a shabby convenient shop is considered comfortable for the villagers.

Intercourse activities are especially organized events that rely on other people's participation. In Dimen village, these activities can take place in both exterior public places and interior spaces of a person's home. Owing to the unique ethnic customs and traditions, there is a great variety of intercourse activities. Most of the activities held in a public building are open to the public. However, certain rituals and important events held in the Tanggong Temple or other religious buildings are only open to specific people. The intercourse activities may have various natures and take place at different locations. In Dimen village, most of the social activities are held at the gate of the village, the drum towers, the Ka rooms or drama stages.

One special feature of Dimen intercourse activities is that the intimate interactions among the villagers. In comparison to urban dwellers who value more on their privacy and seldom interact with strangers, every villager in Dimen know or related to each others in certain ways. As a result, the intercourse activities, such as Singing Competition (fig.2-44) or Qiansan Meeting, can usually achieve very high participation. Most of the intercourse activities take place in drum tower and other public spaces which turn out to be centers of villagers' actions.



Fig.2-44(1) (2) Holding activity in a drum tower

Although the physical environment has no direct impact on the content and quality of intercourse activities, a better public space can enhance the experience of participation. These kind of public activities ensures a regular communication and interactions among the villagers which eventually reinforce their bondings and sense of belonging. Therefore, the public spaces where these activities are held play the utmost important role in encouraging the continuation of these activities.

5.1.2 Dimen Dong Village's Different Public Spaces Match Different Activities

The contents and qualities of Dimen Dong village's public activities can be improve through the design of the physical environment of public space. The choices of building material and color can create uniformity of the landscapes and enhance the aesthetic experience of residents. When reforming and preserving the village, a careful and rational plan will rekindle the liveliness of a public space and hence, improve the quality of public activities.

Dimen village is characterized by its lower and dense buildings and walking is the main way of transportation in the village. Therefore any dwellings, public buildings and small shops along the street can turn into comfortable spaces for outdoor activities. Many Medieval European towns are similar to Dimen Dong village in the general layouts the consideration for public spaces. However, they both lack of rational planning when they were first turned into settlements. Through my field investigation, I find out that Dimen village manages to maintain its sustainability despite not being scientifically planned in the beginning. The arrangement and layout of the village have been constantly reforming to meet the needs of the villagers. In comparison to modern cities that are built based on

urban planning, Dimen village is also able to conserve its own characteristics and make advancement.

5.1.3 The Current Living Requirement of Dong Village's Public Space

In recent years, Dimen village's social structure, as well as the relationship between supply and demand, have been drastically changed. New technologies and electronic devices such as telephones, televisions and computers are gradually introduced into their lives. These new elements may invade the public space and affect the face-to-face communication of the villagers. Dimen village's household population also decreases from 4.7 people per family in 1995 to 3.8 people per family in 2010. This decrease indicates that smaller nuclear families are becoming the new trend and big family gatherings may be disappearing. At the same time, the demographic structure of Dimen village is changing since more and more young people prefer to leave the village and work in developed areas. Therefore, the variety of necessity activities are decreasing, but spontaneous activities are increasing when the majority population remaining in the village are old people and young children. The needs and utility of public space also increase as a result. Commercialization also encourages the villagers to change the meeting places from the ponds or the fields to shops and restaurants.

Although we encourage the Dongs to keep and conserve their traditional customs handicrafts, life-styles and public space, modernization and new technologies should also be introduced to improve the economic conditions and living standards of the villagers. I believe the following aspects shall be considered when reforming and conserving Dimen Dong village's public spaces:

1. Provide proper environment for necessity activities. New roads should be built for motor vehicles to ensure the accessibilities from Dimen to other areas.
2. Provide comfortable space for spontaneity and entertainment activities. We can develop communal spaces within each block or construct small-scale public facilities near the fields or the ponds.
3. Provide spatial and multi-functional environment for intercourse activities. The size of public space should be well maintained and modern electronic devices and equipments should be introduced to improve the quality and variety of these events.

6 Problems

In recent years, more and more problems that are seriously affecting the beauty and culture of Dong villages are surfacing and becoming even more crucial. Although I have already mentioned some in previous chapters, other problems also cause my concerns, and I would like to look more into them in the following chapters:

1. The village's landscape is affected by non-traditional building materials

New houses that use non-traditional building materials like bricks, cement, or steels are built on the former foundations to replace the destroyed ones. The new ones disrupt the neat alignment and uniform appearance of the traditional buildings, and negatively affect the original landscape of the village.

2. Villagers are lacking of awareness on preserving traditional buildings

In order to increase their income, more and more younger generations of Dong people are leaving the village to work in the cities. They are not well educated on protecting the village's culture and heritage and reluctant to inherit traditional handicraft or maintain the primitive mode of production. Scholars like Marie Anna Lee have noticed the endangering of Kam paper-making techniques and cloths design motifs.

3. The village's infrastructure is underdeveloped

The village has no developed facilities for water and heat supply. The villagers are still depending on physically carrying water from wells and ponds, which is not only time

and strength consuming, it is also very ineffective for fire precautions. There are also no developed drainage system and sanitation facility in the village. The villagers usually dispose their waste and garbage into the water pools and depend on the water flow to wash them away. This habit is severely affecting the surrounding environment and public hygiene of the village.

4. The tourism industry is underdeveloped

Due to the luxuriant greenery and scenic geography of the Dimen area, it has becoming the new escape place for urban dwellers and tourists. However, the underdeveloped infrastructures and promotional plans have hinder the development of local tourism. Being extremely remote in mountain areas, it takes more than 4 hours to drive from the nearest town reach the mountains, then another 2 hours of driving through the mountains before arriving the village. Therefore, visiting the Dimen area is still unthinkable for most of the tourists and visitors.

5. Slow economic growth

Dime village's revenue mainly comes from primitive agricultures and selling traditional handicrafts. However, a large number of young villagers are leaving the village to work in more developed areas and causing drastic decrease in labor force. Primitive agricultures and handicrafts are hardly maintaining the self-sufficiency of the village and impossible to make any surplus values. The Dimen village is seriously underdeveloped and struggling on achieving basic living standards.

7 Case Study

The development of Chinese economy and society accelerates rural development as well as reformations of ethnic village. However, modern developments also raise great concerns about how to preserve the village's traditional architectures and maintain the ethnic cultures while making changes. Dimen Dong village has its advantage of being remote from Han settlements and big cities and hence, it still manages to keep most of its original architectures and layouts. However, more ethnic settlements are struggling in keeping their precious traditional architectures and protecting their heritages from the threats of urbanization. In this chapter, I am going to focus on other Dong villages to further investigate into this issue.

7.1 The Reformation of Gaoding Village's Spatial Form and Buildings

Gaoding village locates in Sanjinag County of northern Guangxi Province. Embraced by deep mountains, the Gaoding village is hiding in a narrow valley that has abundant rivers and thick forests. It is famous for the distinctive ethnic cultures and favorable natural environment. However, the harsh topography has made transportation in and out of the valley very hard and seriously hindered the development of the village.

In recent years, Gaoding has undergone several rapid reformation projects to improve the infrastructures and road conditions, but they also raise more concerns. On one hand, Dong villagers are eager for improvement of their current living standards; on the other hand, local government demands the people to conserve their heritage.

7.1.1 The Traditional Spatial Form of Gaoding Village

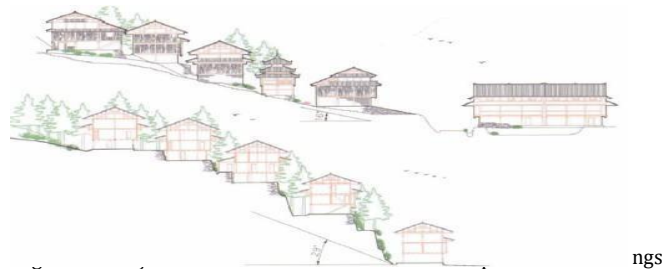
Zhai is a camp or quarter that is surrounded by fences and walls with self-protective nature. Back in Qing dynasty, *zhai* had been recognized as an administrative unit in Sanjiang County. Up till now, a lot of ethnic villages are still keeping their names as *zhai*. In



Fig 3-1, a bird view of Gaoding village

a village, the houses of different clans are usually separated into various quarters and individual drum towers are built in each quarter to represent the respective clans. Dong people believe that they will only be protected by the “God” if they live in groups. Therefore, the Dong village is usually very dense in population and new houses are encouraged to build within the same village. Unlike the Dimen village in which the drum tower is standing at the center of the village, the central drum tower of Gaoding village is built on the southern hillside. Its altitude indicates its superiority in the village (fig3-1).

The village buildings are located on the man-made terraces that are planned and constructed by the entire clan. Collective construction allows the villagers to arrange their buildings adjacent to each others and rise according to the changing steepness of the ground. The size of the buildings varies from two to five rooms. The spacings between individual houses are quite small that only allow narrow lanes to pass between them. Although the buildings are close to each other, the well planed arrangement ensures still sufficient daylights and good ventilation . (Fig 3-2).



7.1.2 The Impact of Social Structures On Gaoding Village's Spatial Formation and Reformation of *Ganlan*-style Buildings

Just like all the other Dong village, the traditional buildings in Gaoding village are also constructed with woods, and adopt the *ganlan*-style structure. The biggest shortage of wooden building is its vulnerability towards fire hazard. The fire precaution measures in Gaoding village is quite similar to Dimen, in which a lot of ponds and paddy fields are scattering among the dense residential areas to serve as firebreaks. However, as the population is growing and the needs for more living space is increasing, many ponds are filled to provide lands for building new houses. This action has highly increase the risk of fire hazards.

In order to minimize the damage of fire, Gaoding villagers are growing fond of brick buildings. Unfortunately, the mountainous topography surrounding Gaoding village is unfavorable for constructing brick houses since they are much heavier than wooden buildings. Making bricks will require digging into the mountains for soils, but this will increase the risk of landslide. Importing and transportations of bricks from other areas are very costly and inconvenient. Therefore, the villagers in Gaoding neither have better fire precaution measures nor abilities to rebuild all their houses with bricks.

The changing life-styles of the younger generations also create new changes to their ideology of building houses. The newly built houses are further apart from each other; brothers no longer combining their houses into a single building like in the past; Thnew buildings do not follow the height and width of older buildings, and the arrangement is no longer collectively planned. Some villagers even choose to build their houses far from the village center which reflect their desires for privacy and freedom.



Fig.3-4(1) The newly built houses in Gaoding village (2)The comparison between old and new buildings in Gaoding

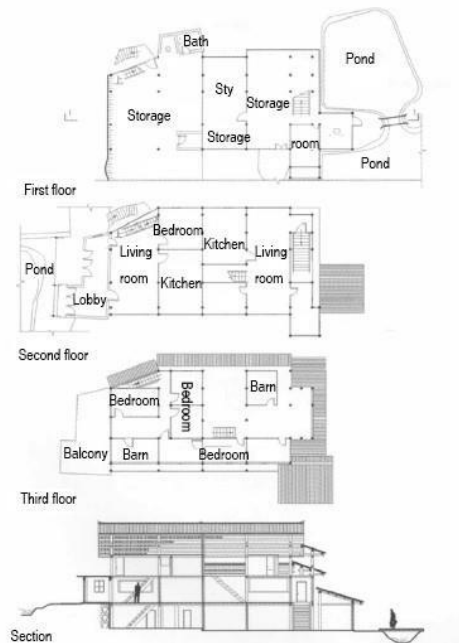


Fig 3-3-1Brothers' houses (built in 1980s)

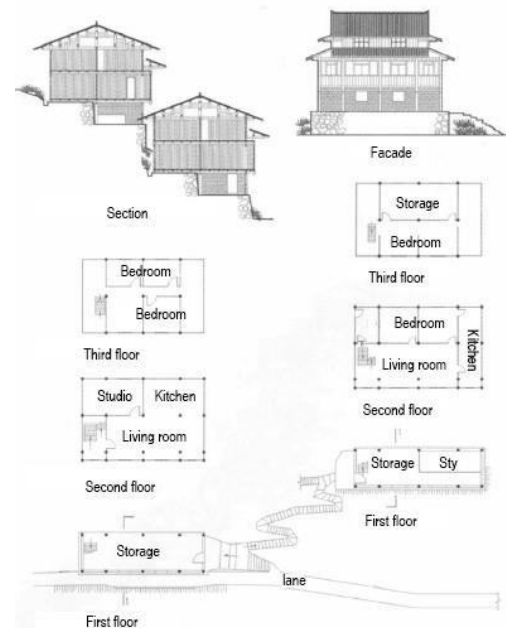


Fig 3-3-2 Profile of another brother's houses (built in recent years)

7.1.3 Suggestions For Possible Reformations of Gaoding Village's Wooden *Ganlan*-Style Buildings

There is one particular building that I have investigated to learn more about its reformation. This house stands in the village center and it has a livestock pen and a fireplace on the ground floor (fig 3-3-1). The reformation project for this building is very difficult because it is located in a dense neighborhood. On the bright side, economic development contributes to the change of family structure and nuclear families that require smaller and private living space is becoming the mainstream. This encouraged the construction of smaller building that stays further apart from its neighbors and more space was created for firebreaks and ponds (fig3-3-2). The ground floor also underwent reformation to reorganize its messy combination of storage, livestock pen, utility rooms—it is now divided into individual sections for cooking, storing and rearing livestock. Biogas replaces firewood to become the main energy supply for the household to minimize the danger of fire.

Fire disasters are still the pressing problem of many Dong villages because the damages are usually disastrous. However, local government want to maintain the traditional architecture to conserve local heritage and attract tourists, thus brick houses are not approved for construction. It seems that the best solution to resolve this conflict is to first transform the social structure. New family structure and modern life-style will eventually encourage innovative ideology in house buildings. At the same time, it is also very crucial to maintain the balance between achieving a modern life and keeping the Dong's ethnic identity.

7.2 The Preservation and Tourism Development of Zhaoxing Dong Village

The second case study is about Zhaoxing Dong village in Liping County. Zhaoxing village is similar to Dimen village in its geographical environment and spatial formation. In recent years, it has been developed into a popular tourist spot. Tourism does not only boost local economy and people's living conditions, it also encourages conservation and self-improvement of the village.

7.2.1 The Overview of Zhaoxing Dong Village and Its Value of Protection

Zhaoxing Dong village is located in southeastern Liping County of Guizhou Province and is about 68 km away from the nearest town. The local government is also located in this village and the transportation infrastructure is well develop to allow access to Guangzhou and Guangxi Provinces. Zhaoxing Dong village covers an area of 270,000 square meters and the total population is about 3,800 that consists of 860 households. The history of Zhaoxing can trace back to more than 840 years ago which makes it one of the biggest and oldest Dong village in China.

Zhaoxing village is divided into five camps: Ren Camp, Yi Camp, Li camp, Zhi camp and Xin camp. Each camp has its own drum tower and are collectively known as the "Zhaoxing's Drum Tower Group." These glorious drum towers and flower bridges have varied designs and architectural styles and play significant roles in representing the architectural achievement of the Dong people.

Zhaoxing Dong village is also famous for its ethnic architectures and rich ethnic cultures. The well conserved Zhaoxing Dong village and its related cultural heritage turns

into a great attraction for tourism. The success of Zhaoxing's tourism industry also encourages the appreciation and conservation of Dong heritage in the other areas.

7.2.2 The Conditions favorable for Tourism Development in Zhaoxing Dong Village

The pleasant natural environment creates the foundation for Zhaoxing's development. Zhaoxing Dong village is settling in a valley between two mountains. Its subtropical humid monsoon climate ensures abundant rainfall and luxuriant vegetation and natural resources. The natural scenery is extremely beautiful and provides an idyllic escape for nature lovers (Fig 3-5).



Fig 3-5 (1)panorama of Zhaoxing Dong village



(2)water lane in Dong

The typical ethnic architectures and symbolic buildings such as the drum towers and flower bridges are no doubt are the second big attraction for tourists and researchers. People from all around the world are traveling to Zhaoxing to admire its amazing traditional buildings. These architectures receive the honorable title of “The Treasures of World Architectural Art.”

As I have already mentioned in the previous chapters, the most representative architecture of a Dong village is no other than the drum towers. The drum towers of Zhaoxing are built with odd-numbered levels, ranging from 5 to 29 levels. This is because Dong ancestors believed that odd numbers were auspicious. The average height of these

drum towers is from 6 to 10 meters. In the center of each drum tower, a burning fireplace is kept for local custom.

Since there are five camps in Zhaoxing, there are five drum towers, five flower bridges and five drama stages built in respective camps. The five towers are different in shape, height, size, style and tiers of eaves. The highest drum tower in Zhaoxing is located in Xin camp while the shortest one is in Zhi camp; In terms of surface areas, the biggest one is in Xin camp and the smallest one is in Ren camp. Four of them octagon pyramid rooftops and one has a saddle-shape octagon rooftop (Fig 3-6).

Most of residential houses in Zhaoxing are wooden stilt houses with more than two stories. Each story usually sticks out about 0.6 meters more than the floor below to form an inverted pyramid shape. Therefore, Dong people's dwellings are known as the "Inverted Pyramid Houses".



Fig 3-6(1) The Drum Tower and Flower Bridge in Ren



(2) The Drum Tower in Li camp

7.2.3 Zhaoxing Dong Village's Conservation and Tourism Development

In order to preserve Zhaoxing village's traditional landscape and develop tourism at the same time, a very careful planning has to be drawn. The development has to consider everything from Dong village's protection, tourism infrastructures, economical

developments to environmental protection. Local Construction Bureau has listed the following suggestions:

a) The plan for protecting Zhaoxing Dong village and developing tourism

The tourism development of Zhaoxing takes full advantage of its scenic location and cultural heritage. By improving the infrastructure and facilities of the surrounding areas, the tourism resources of Zhaoxing can be further expanded to satisfy different market requirements. On the other hand, the local government, investors and villagers must bear in mind the general guideline of “plan rationally, take priority in protection and develop effectively.” This guideline ensures the sustainability of the local resources and leaving space for future exploration to suit the ever-changing market.

b) To preserve Dong cultural and historical resources and achieve sustainable development

In order to achieve sustainable development of tourism in Dong village, we should strengthen publicity and education to enrich and reinforce the awareness of local government, investors and villagers’ regarding the value of Dong cultural heritage. Following measures should be taken:

1. Set up an organization to supervise rural construction and take appropriate actions on any investors or stakeholders that violating the protection plan or exploiting the local resources.
2. Encourage and support the celebrations of Dong people’s traditional festivals and ethnic events. Dong culture and history should be included in the curriculum of local schools.
3. Encourage the practice of Dong’s tradition customs such as wearing traditional

costumes, speaking the Dong language, and singing Dong folksongs to maintain the cultural atmosphere of Zhaoxing.

4. Take measures to protect local environment, water system and vegetation, as well as promote public health and sanitation of the villagers.

c) Restore and renovate important scenic spots

Repair the old drum towers, flower bridges, drama stages and grassland to restore the original look and improve the safeties of these building to receiving oncoming visitors.

The following two aspects have to be emphasized in the renovation projects:

1. Restore dwellings along the streets or symbolic buildings within the camps using suitable materials to recover their original appearances
2. Remove any unplanned constructions and private properties that are discarded and piled around public spaces like drum tower and drama stage

d) Strengthen publicity and promotion to attract investors and boost local economy.

The renovated Zhaoxing village is improved from its original condition in various perspectives. The existing buildings are carefully restored while new buildings are added to reinforce the infrastructures. The original layout is rearranged in certain ways to highlight the dwellers' daily living and cultural space. By widening the main roads in the village, the village is also more accessible for the increasing visitors. Pictures showing the reformed village are as follows: (Fig 3-7)



Fig 3-7 (1) The renovated Village door



(2) Employ architectural elements of other villages



(3) Neat street



(4) The main roads into the village



(5) well-preserved buildings along the street



(6) well-preserved drama stage



(7) well preserved drum tower and flower bridge



(8) original life customs



(9) Villager's daily life



(10) Paper making skill

The renovation project of Zhaoxing Dong village values its original landscape and spares no effort in enriching and promoting the local cultures. A series of measures have been taken to further conserve the Dong culture and history and at the same time, ensure the harmonious balance between the human activities and natural scenery. These measures are very effective in maintaining the sustainability of the local culture and ecosystem for future development.

By looking the two case studies of Gaoding and Zhaoxing, I can conclude firstly that, traditional cultures and architectures are the two keys to unlock the success of local tourism; and secondly, a well planned tourism industry will eventually benefit the all-round development and economic growth of Dong village. This success requires a thorough consideration from the materials used for the restoration of old buildings, to the education and promotion of local cultural inheritance. Most importantly, maintaining sustainability of local resources and continuous renewal of the cultural liveliness are the first priority in developing any cultural tourism.

7.3. Fire Protection of Fujian Tulou

7.3.1 The historical background of Fujian Tulou

Fujian Tulou(Fig 3-8) has appeared as early as the 13th century in Yuan Dynasty. Mostly built by Hakka people, it is also called Hakka Tulou. After migrating from Yellow River Basin to Fujian, Hakka people built those traditional houses by using the ancient Central Plains' adobe building art, for the purpose of resisting foreign aggression and natural disasters. Yongding County has a large number of Tulou groups. According to the local county records, there are more than twenty thousand Tulou in Yongding. China's Fujian Tulou was officially enrolled in the World Heritage List on the thirty-second World Heritage conference held in Quebec, Canada in 2008.



Fig 3-8 Fujian Tulou

7.3.2 Cultural Background of Fujian Tulou

With its profound cultural heritage, Fujian Tulou gives a full play to the history and culture of Hakka. Tulou has an enclosed shape and an obvious axis, which fully reflects the traditional ancestral concept of Hakka people. Many couplets and inscriptions inside the building reflect the ethics, ceremonial occasions, lifestyle and other Hakka cultures. The architectural attainments amply demonstrated the concept of adaption to local conditions and the philosophy of people orientation. It also embodies the integration of geography, ecology, architecture, sociology, military science, Feng Shui, aesthetics and other disciplines. The wisdom of Hakka people is embedded in the materials, structure, details and other aspects. Hakka Tulou is a model of harmonious coexistence between big families and small society.

7.3.3 The basic characteristics of Fujian Tulou

Classified according to the architectural shape, Tulou can be divided into round buildings, square buildings(Fig 3-9), Wufeng buildings, dented buildings, half-round buildings and buildings like the Eight Diagrams. Round and square ones are the most common. The ancestral hall of the round Tulou is set right against the front door on the ground floor. The courtyards of unit type round Tulou are for public activity, while the courtyards of corridor style ones are completely open for no use.

Fujian Tulou uses earth plate to build the load-bearing wall which is as thick as one to two meters. The wall materials are made of the mixture of soil, sand, wood, and even brown sugar and animal protein. The inner wall is relatively narrow, which generally uses

the rammed earth or brick to build the wall. Beams, columns and plates are mainly made of wood, i.e. local fir.



Fig 3-9 Round Tulou

Beams generally extend inward from the outside wall with Chinese fir as its support on the inner corridor(Fig 3-10). The beam and the column are bound by tenon rivet, while the other parts are connected with bamboo nails. So Tulou is also a minefield of potential fire.

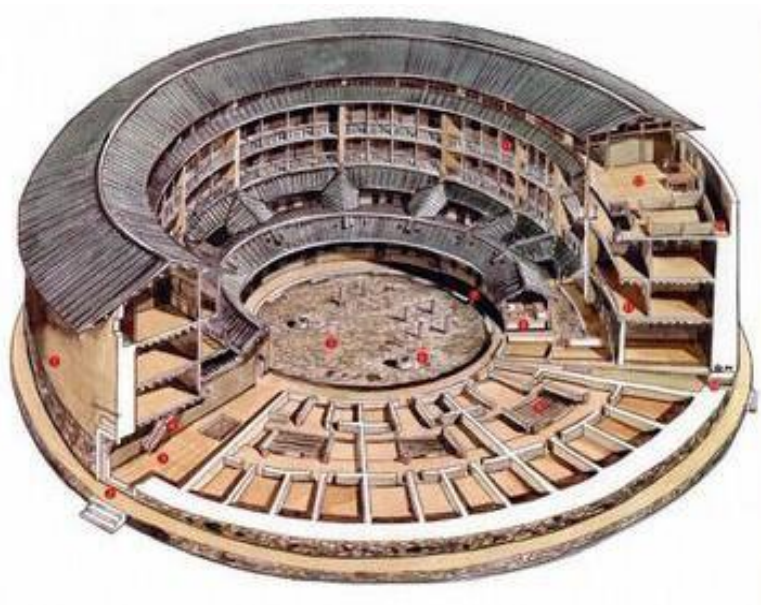


Fig 3-10 Structure of Round Tulou

7.3.4. Current fire prevention facilities in Tulou

Tulou's construction structure is excelled in defending external fire attack. The windows on the external walls are small in size and little in number. A water tank is also arranged on the door frame of the entrance door for water spraying and fire fighting, which is somewhat the prototype of the water curtain system in modern fire fighting method. Inside multi-ring buildings, a certain interval is maintained between the rings to ensure that there is a certain distance for fire prevention. Overall, located at the very center, the ancestral hall of round Tulou keeps a relatively large distance (6-7 meters) from the outer ring, so as to guarantee that the fire will not spread quickly to the living area that has biggest fire hazard. In addition, the wells inside the buildings and the half-moon-shaped pond in front of the door can provide water in case of fire attack.

7.3.5. Fire protection measures of Tulou

It is necessary to standardize the management and transformation of Tulou by figuring out the causes of fire. Only in this way can we improve Tulou's ability to resist fire, prevent the breeding of fire hazards, effectively reduce the occurrence of fire accidents and cut down the losses to the utmost. It is important to reduce fire triggers, prevent the occurrence, control fire spreading, strengthen facilities for evacuation and guarantee prevention conditions. Employing safety evacuation technology and reasonably setting emergency lighting, evacuation signs, warning broadcast systems and other safety evacuation facilities can effectively ensure that persons evacuate safely and fire casualties are reduced. Details are as follows.

7.3.6 Building components and fire protection improvement of building materials

The safety of building structure is the key of the whole building as well as the foundation of fire protection work. The fire resistance grade of the building is the basis for the research of fire protection measures and the corresponding building fire prevention measures. In Tulou's fire protection work, it is necessary to correctly select and determine the fireproof rank to prevent fire occurrence and spreading. At present, the fire resistance limit and combustion performance of most building components is not up to the standard requirement. Feasible ways are coating the wood surface with fireproof paints, erecting fire resistant ceiling for wood structure, adding fire protection coating and so on. Besides, we can also regulate the use of internal decoration materials and their combustion performance, and take the following measures: prevent combustion of the materials (applying fireproof coating or unflammable materials); Materials that are exposed to heating objects are treated by non burning material or flame retardant; stairs and damaged parts of the inner ring should employ unflammable materials or flame retardant wood.

7.3.7 Water supply and protection facilities against fire

The amount of water must be sufficient enough to endure the duration of fire in case that fire could not be suppressed for lack of water. Key fire facilities are the fire pipe, fire hydrant and pressurized equipments. The fire pipe and drinking water pipe are combined in Tulou, while the fire hydrant is set outside. Natural water is a better choice to fight fire.

Consider adding fire pump and other pressurized equipments if pipe network pressure cannot be guaranteed.

7.3.8 Conclusion

To better perform Tulou's fire protection work, we should learn from fire science and technology research achievements at home and abroad. We should conscientiously sum up the experience and lessons and establish fire risk assessment method. We should also conceive new fire protection concepts and improve fire protection specifications and standards. We should feel encouraged to use new materials, new products, new technology and new process, relying on scientific and technological innovation to improve the fireproof performance of building materials (here refers to the wood) and the fire resistance rating of buildings (Tulou). We should also humbly learn advanced fire protection experience at home and abroad, improve fire protection's designing process, optimize supervision and management mode, and improve the effectiveness of Tulou's management. The analysis of the fire protection of the Fujian Tulou can be referred to the renewal design of dimen village.

8 Conclusion

In the beginning, of this paper, I have investigated the living environment and the customs of the Dong ethnic minority in the eastern and southern Guizhou province, and tried to trace the impact of the local people's lifestyle the original architectural layout and archetypes of the settlements. Despite the variations among different villages, all of them share two common characteristics: the adoption of *ganlan*-style houses and the distribution of the village in which ensures each village is dispersedly settled across a wide land while maintaining a concentrated arrangement within each village.

The Dimen village is one of the most representative Dong village due to its geographical location, natural environment, economy and overall layout. This paper has focused on explaining the location of Dimen and the historical formation and arrangement of its various quarters. I have also analyzed the importance of public space and symbolic buildings, such as the drum towers, flower Bridges, the Tanggong Temple and the drama stage, within the village.

In the fourth chapter, I have further investigated the Dimen community to understand the impact of distinctive ethnic characteristics on the formation mechanism of the village's public space. Although the public architectures such as the drum towers, flower bridges, the gate and the drama stages have varied functions in the village, together they form the symbolic manifestation of the ethnic atmosphere of the Dong culture and continue to play important roles in maintaining the layout of Dimen village. The Dimen village also successfully achieves a harmonious balance between the man-made sceneries and the natural environment. Further analysis will lead to the finding of the arranging

pattern and component parts of a village are similar to the five elements of city space in *The Image of the City* by Kevin Lynch. According to Lynch's theory, the five elements that help a visitor to understand his surrounding and the city layout are:

1. paths, the streets, sidewalks, trails, and other channels in which people travel;
2. edges, perceived boundaries such as walls, buildings, and shorelines;
3. districts, relatively large sections of the city distinguished by some identity or character;
4. nodes, focal points, intersections or loci;
5. landmarks, readily identifiable objects which serve as external reference points.

By applying this theory on to the layout of Dimen village, it is not hard to notice the existence of similar elements within the village: the streets are arranged in a cobweb pattern that radiate out from the center drum tower and create the basic gridlines in dividing the village. Riverbanks and hillsides act as the edges and boundaries for the settlements. The village is divided into five quarters that are distinguished by its own clan; each quarter is further divided into blocks that serve as the basic residential unit of the entire village. Landmarks such as flower bridges and drum towers are not only symbolic reference points for the village orientation and layout arrangement, they are also the nodes and intersections of various spatial components.

Therefore, I can conclude firstly that, the public space of ethnic settlement are not much different from modern cities; I can even suggest that the planning of urban areas have never departed far from the original models of primitive settlements. This is also the reason that we should emphasize the importance of conserving traditional settlements despite the rapid pace of modernization; secondly, traditional customs can coexist with

modern life-style as long as researchers, investors and local government are willing to work together in finding the balance; thirdly, the combination of traditional public space and new architectures has become an innovative mechanism of public space in Dimen, which is worth our attention to ensure the sustainability of the village.

Guidelines for the protection of World Heritage

If the State Party wants to take effective and active measures to protect, conserve and present cultural heritage on its territory, it should try as much as possible:

1. to adopt a policy which may make the cultural and natural heritage play a role in community life and to combine the protection of the heritage with comprehensive planning programmes
2. to establish services to protect, conserve and present the cultural and natural heritage in the districts where there are no such services, and equip them with proper workers and guarantee the carrying out of the functions
3. to undertake scientific and technical studies and figure out the ways that may be helpful to deal with the potential dangers
4. legal, scientific, technical, administrative and financial measures should be taken to protect, conserve, present and rehabilitate the heritage
5. to build and develop national or regional centers to give lessons about the heritage's protection, conservation and presentation and to do more scientific researches about this topic.

The aims of the next stage is to apply the theories mentioned above to practice with four purposes:

1. Restoring the old buildings and encourage the usage of traditional building materials for new constructions, so that the traditional design and distinctive characteristics of the village can be inherited and recovered.

2. With the support of careful planning and sufficient fundings, developing modern infrastructure will help in maintain the public space and cultural heritage of the village and improve the living standards of the villagers at the same time.

3. Develop local tourism by expanding the space for social activities, strengthening the safety of old buildings and increasing public facilities. Improve the villagers' living standards to maintain the local population.

4. Boosting tourism through the protection and restoration of Dimen villages. Tourism can help in boosting local economy and provide more working opportunities for younger villagers. As a result, intangible heritage can be turned into a attraction for new economic development.

9 Project proposal

The improvement and renovation of Dimen Village

The main purpose of my proposal is to give suggestions for possible improvement of the villagers' living conditions while maintaining the traditional architectural style and the layout of the public space. The first part of this proposal is a general introduction of the formation of the public space in Dimen Village and applies relative theories to the arrangement of the actual village. In the second part, I propose several suggestions for possible improvements. In the final part, I conclude the significance and contribution of my proposal for the future development of Dong village.

Since it is quite difficult to apply my theory on the entire village, I focus on a particular prototype to test my proposal. Hopefully, this proposal may shed some new light in this field of research and provide reference for future development.

9.1 Introduction

9.1.1 The Dimen Village and the site of project.

As I have introduced in the earlier chapters, Dimen village has a documented history of more than 700 years. (Fig4-1). Originating from the Mu quarter, Dimen Dong Village gradually had developed into five quarters. The construction site that I have chosen for my project is located at the intersection of Mo quarter and Mang quarter, where an abandoned grain drying ground surrounded by nine houses and four barns can be found (Fig.4-2).



Fig.4-1 The overall scene of the Dong Village



Fig.4-2 The site

9.1.2 The Architecture Archetype and Its Reformation

A typical Dong stilt house usually consists of three larger rooms and two smaller ones on the upper floor, which are supported by five main columns. There is loggia formed by the empty space between the front eave column and the two columns supporting the main living rooms on the second floor. Going inside, the second room and the third room are fireplace and bedroom respectively (Fig.4-3) (Fig.4-4).

A single-flight staircase is located on the side of the house and connects the various floors. Based on this

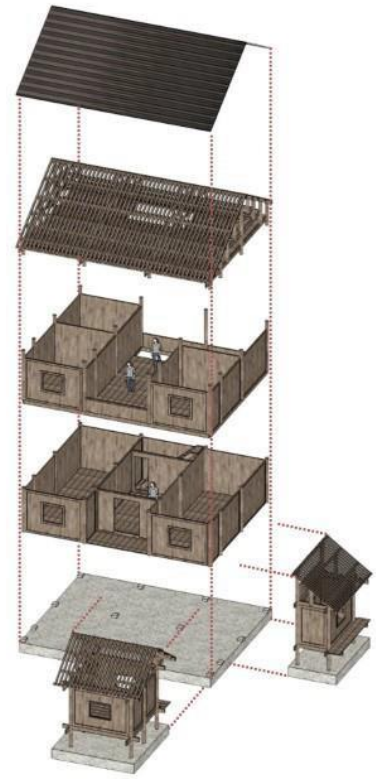


Fig.4-3 The decomposition of the Dong house prototype

prototype, variations of Dong houses can be found among the village to meet the needs of different

families and functions. The biggest difference is usually the bay length of the upper floor that is measured by the number of rooms; the common Dong house is usually three bays long since three rooms are aligned in a row, while other variations can be four or five bays long. Other changes include building external extensions or adding side buildings to hold more rooms on the upper floors. However, the size of the foundation seldom changes to ensure the fixed spacing between each house. Most of the roofs are overhanging and sliding (Fig.4-5).



(1)



(2)



(3)



(4)



(5)

Fig.4-4 The formation of the Dong house prototype

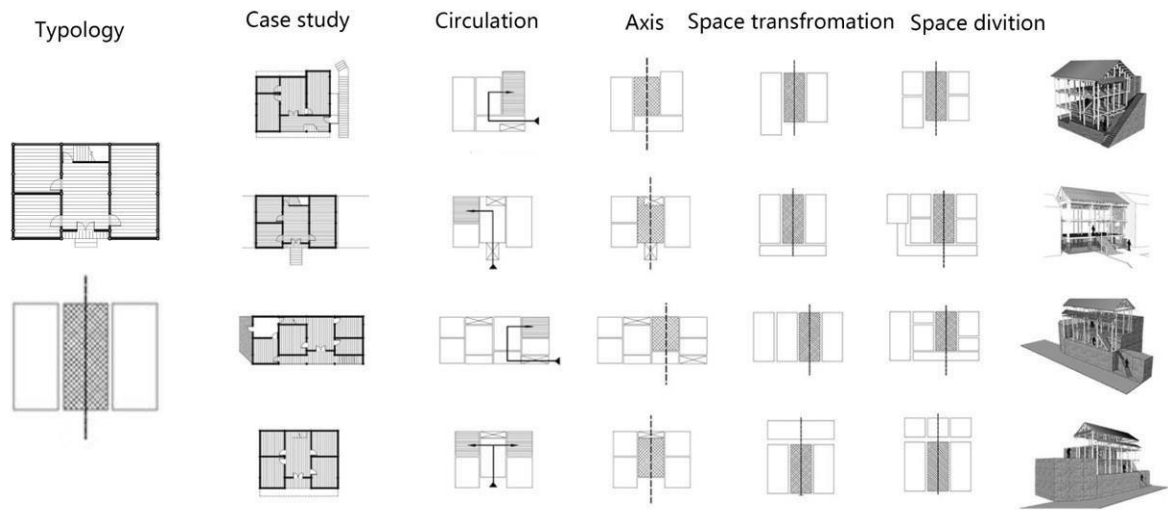


Fig.4-5 Prototype and evolution

9.1.3 The Analysis of the Experimental Base

The buildings on my experimental site can be classified into two types according to their construction methods and structures. The first category is traditional wooden structure and most of them are two or three bays in length. There are extended spaces attached to the main building to be used as kitchen, bathroom or storage (Fig.4-6). The second category of buildings are built with both concretes and woods in which the concretes are used to reinforce the support of the wooden structure. It is also influenced by the prototype of traditional Dong houses.

The boards that are used for the walls are arranged vertically for barns or additional small room, and horizontally for the main body of the dwellings (Fig.4-7).

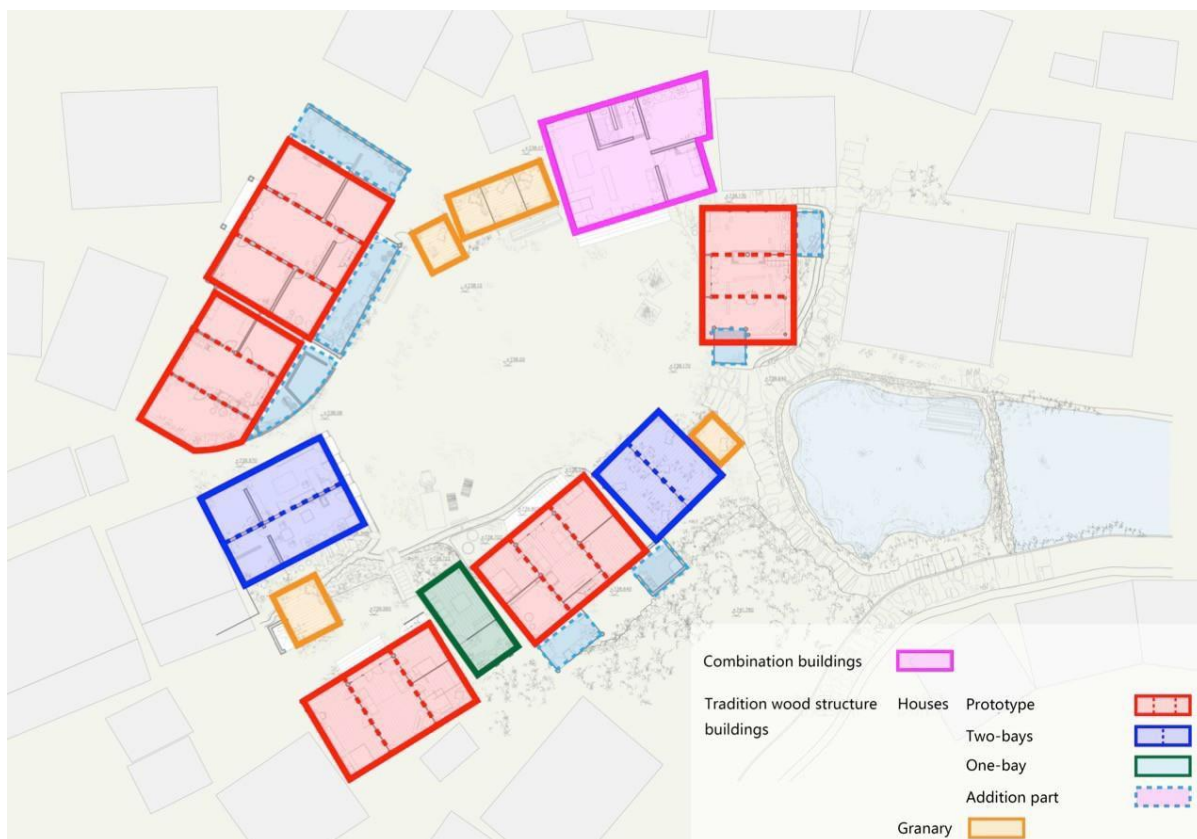


Fig.4-6 The analysis of dwelling types

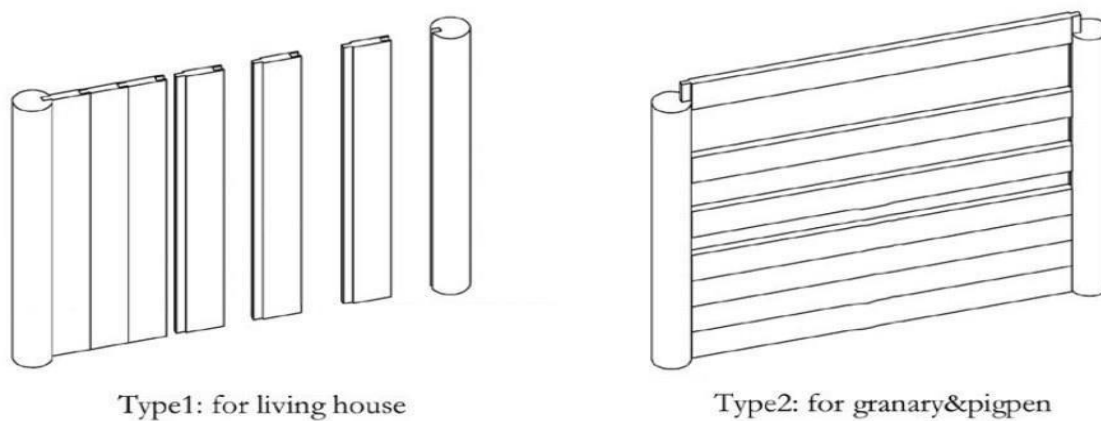
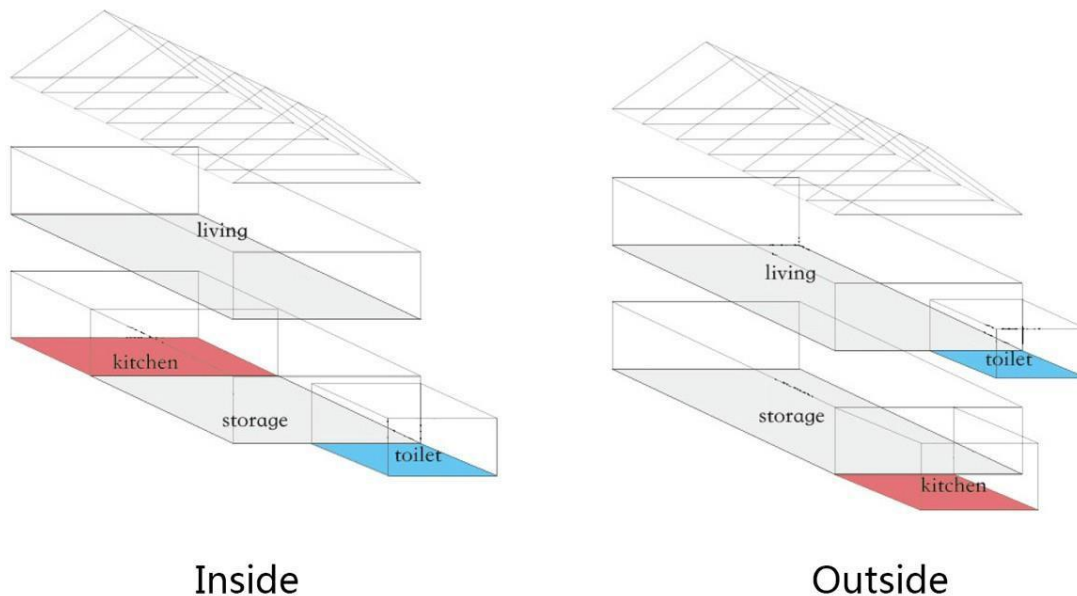


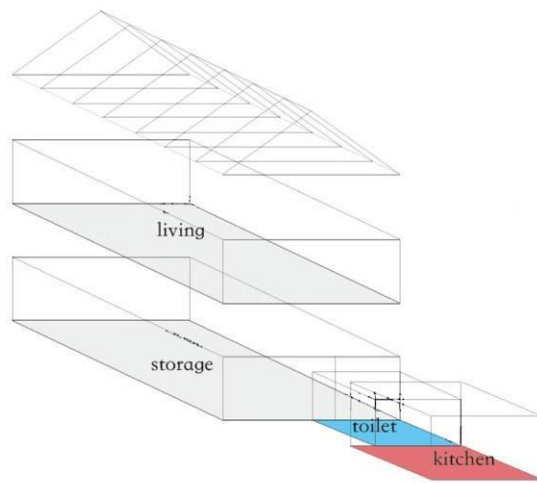
Fig.4-7 Connection modes of boards

9.1.4 Interior Layout and Integration of Functions

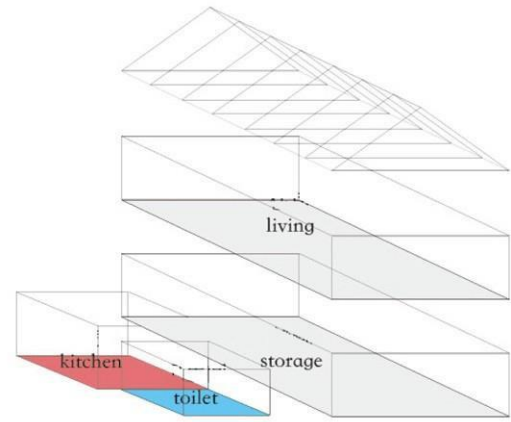
Dong dwellings can be divided into four types based on the relative position of the kitchens and the bathrooms to the main building:

The first type is internal style. The kitchen is built inside the main building and the chimney is located at the back or the side passage. This design is convenient for cooking, but has a higher risk of catching fire if the residents are still using firewoods. The second type is overhanging style in which the bathroom and kitchen are hanging extensions on the side of the house. Third type is a combined style in which the bathroom, the kitchen and the main building are adjacent to each other; this type requires a larger construction space. The last one is an independent style since the bathroom and kitchen are independent buildings that are constructed outside the main building and they are not connected. This type is the most suitable structure in preventing fire hazard and ensuring sanitation (Fig.4-8).





Combined



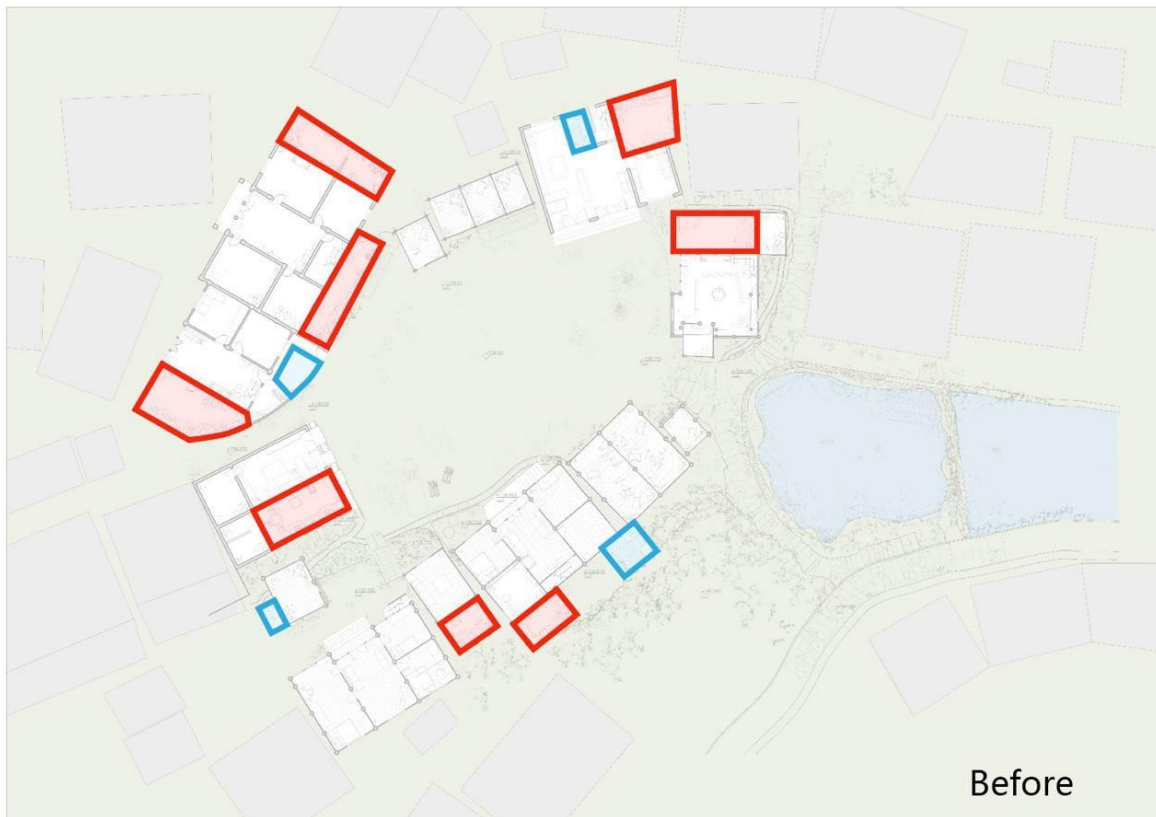
Individual

Fig.4-8 Different arrangement of the kitchen and the bathroom

9.2 Design proposal

9.2.1 kitchen and bathroom

In my opinion, the overhanging type is space saving for a village of high residential density. It is also very convenient for the residents since they do not have to move in and out of the main house to use the kitchen and the bathroom. This structure can improve the kitchen's ventilation and functionality of storing-washing-cooking in the space. In my reformation design, I try to attach the kitchen and the bathroom together so as to better connect and arrange the pipes and sewers (Fig.4-9).



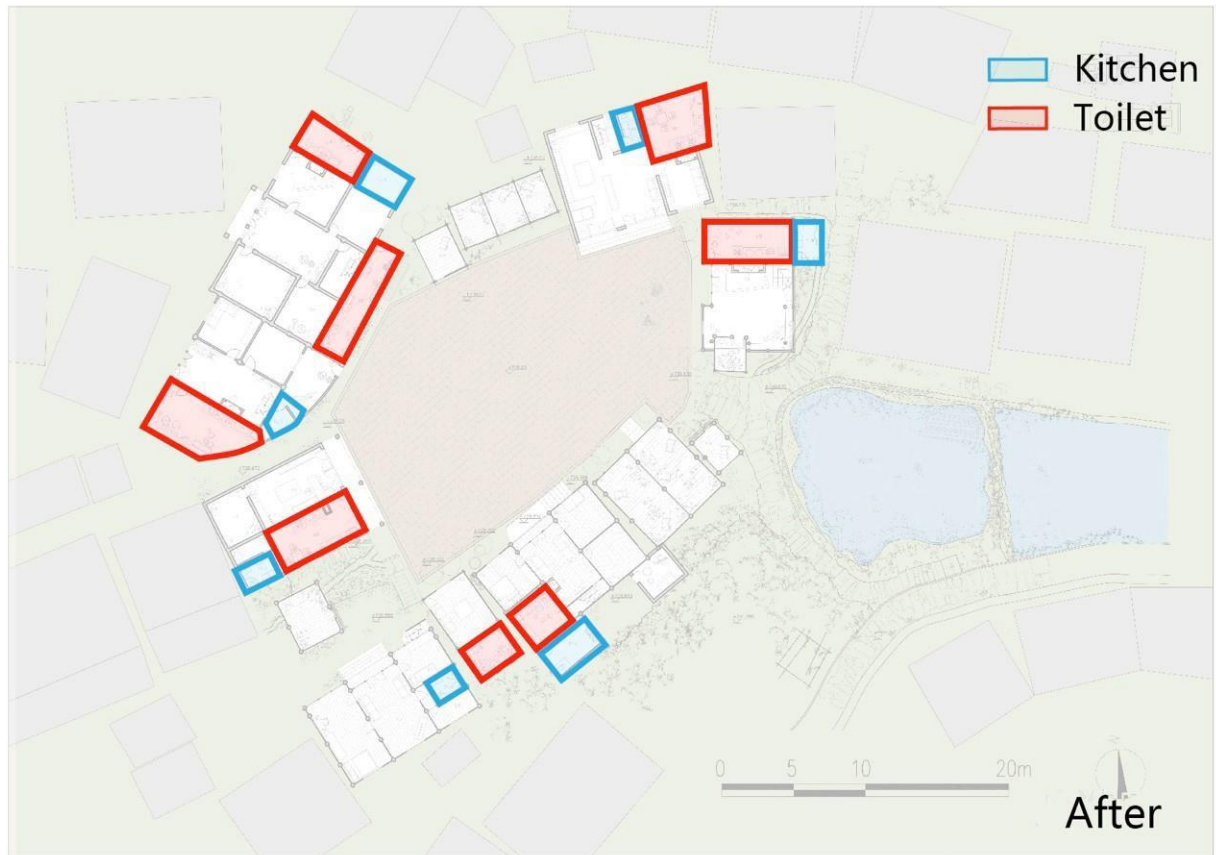


Fig.4-9 Comparison between before and after the redesign

9.2.2 Heating System and Fire-pit

Many Dong villager are still keeping the tradition of using fire-pit in cold weather. However, fire-pit is the main cause of fire hazard and toxic smokes that are threatening the properties and lives of the villagers. The new fire-pit will resemble the western indoor fireplace that is built into the wall of the kitchen to minimize the danger of lighting fire (Fig.4-9). The joining of the fireplace and the kitchen can be arranged in various ways depending on the layout of the particular house (Fig.4-10) (Fig.4-11) (Fig.4-12).

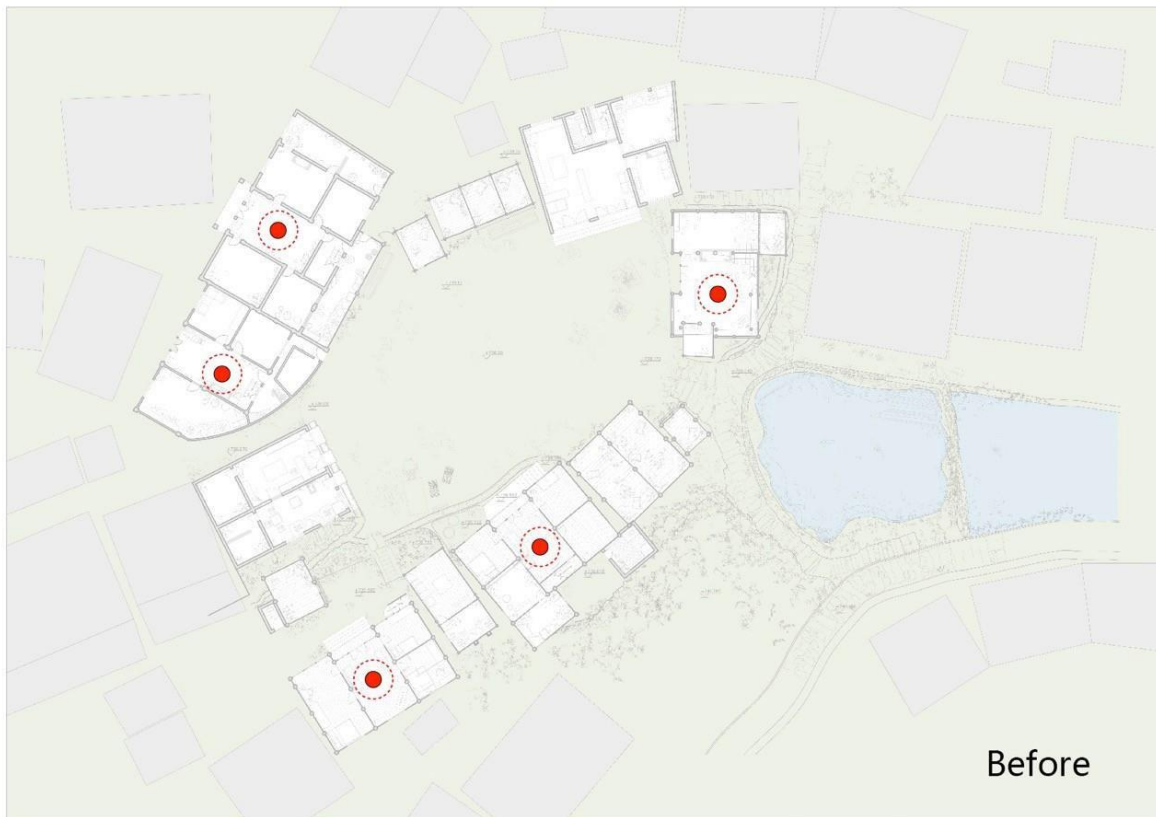




Fig.4-9 Comparison between before and after the fireplace is rearranged

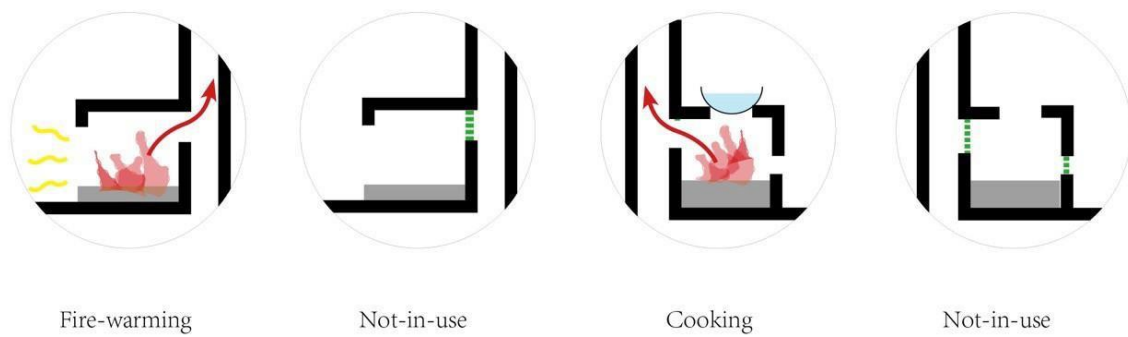


Fig.4-10 Sketch diagram of the hearth

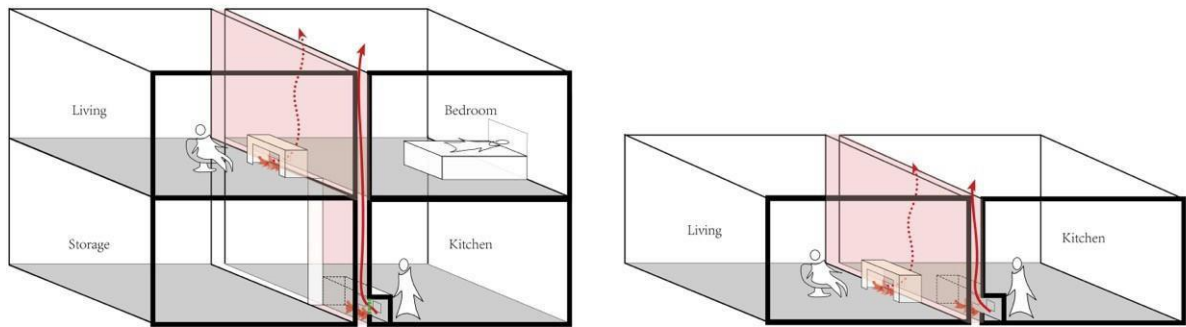


Fig.4-11 Schematic diagram of heating

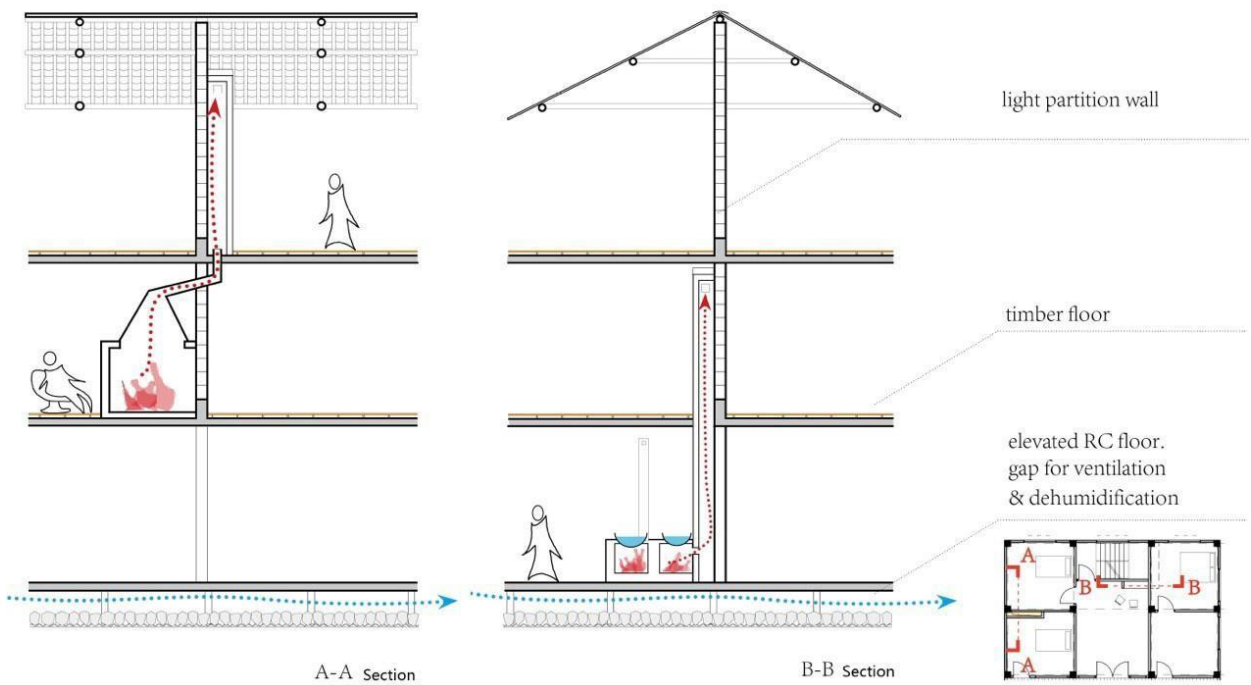


Fig.4-12 Way of heating on section

9.2.3 Energy Supply, Drainage, Purification of Water and Prevention of Fire

Both southern and the northern side of the Dong village are surrounded by mountains and a few rivers and streams are running through the village. The overall topography of the Dimen is high in the North and the South; low and flat in the middle area (Fig.4-13) (Fig.4-14) (Fig.4-15).

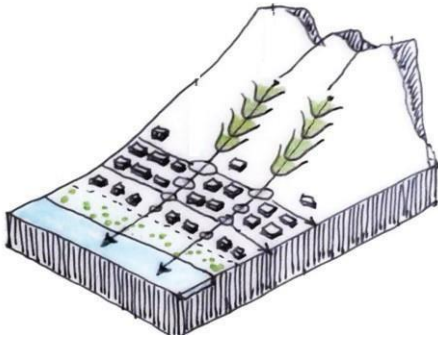


Fig.4-13 Source of water

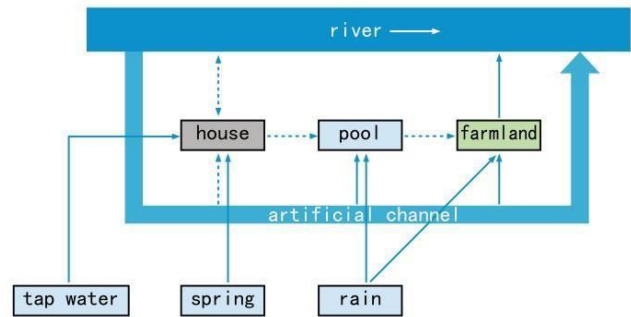


Fig.4-14 Water system



Fig.4-15 The relation between the site and the water system

In order to build an efficient water systems, it is necessary to consider the specific topography of Dimen area (Fig.4-16).



Fig.4-16 Supplying water

The drainage system has to be designed for two main functions: draining of rain water and domestic sewage. The former one will run along the slope of the sunny side before reaching the surrounding ponds, fields and rivers; the waste water running from the latter will be treated with either a natural filtration system or a septic tank (Fig.4-17).

As for the power system, a power station needs to be set up in the southeastern area of the site. I prefer to use underground cable to minimize the disruption of the scenic view and public space layout of the village (Fig.4-18).

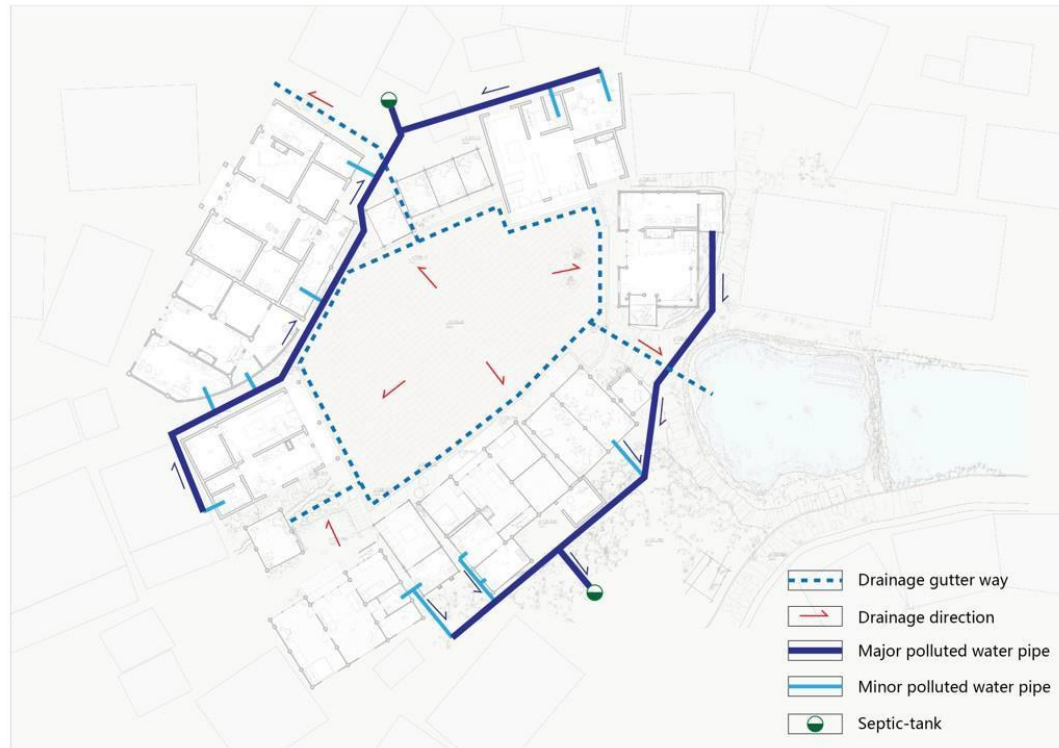


Fig.4-17 Drainage of water

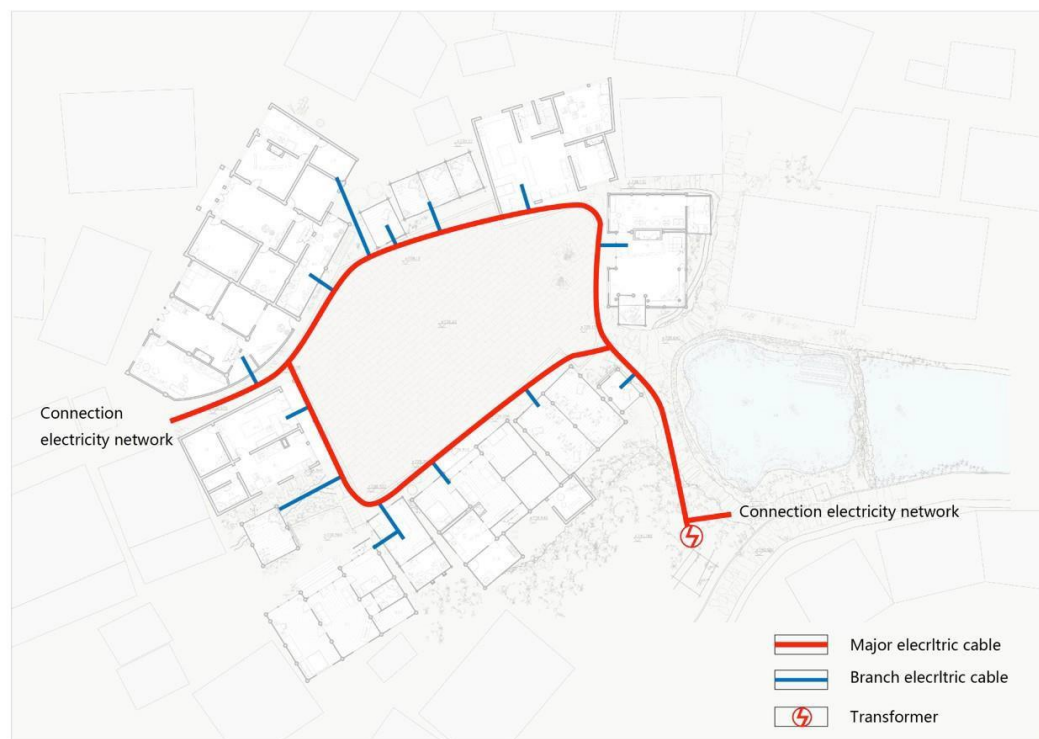


Fig.4-18 Power system

For prevention of fire, I should first decide on the establishment of a fire-compartment and then, install an outdoor fire hydrant. Buildings should also be prepared with fire safety measures. For example, the buildings can be painted with fire retardant coating to slow down and minimize the damage of fire; smoke detection system and sprinkler system can also be installed to detect and distinguish fire in the shortest time (Fig.4-19).

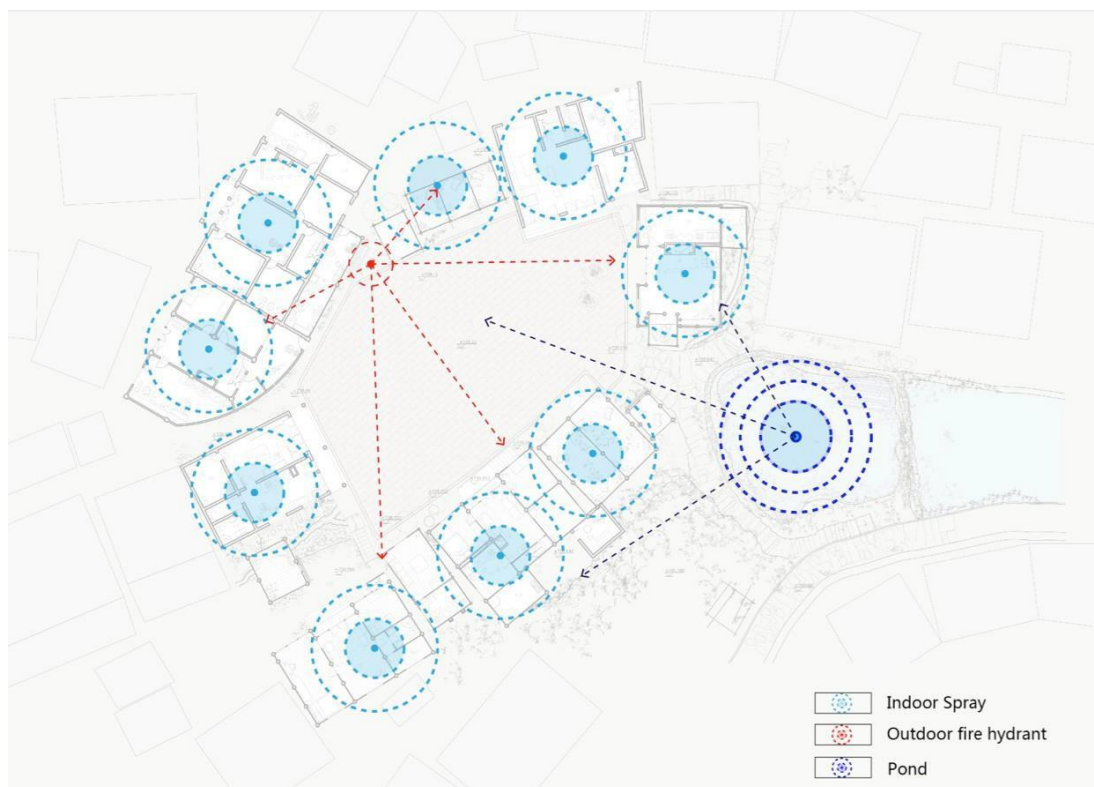


Fig.4-19 Fire-fighting

9.2.4 Analysis of The Spatial Configuration

Paving the central open ground of the site with slab stones can restore its function for grain drying and provide a public square for the residents. Arranged plantations can be used to divide the open space into several sections to multiply its function. At the same

time, I also want to design an area to maintain what is called by Jan Gehl as the “flexible boundary” between the public space and private houses by building loggias and walking alleys around the open ground (Fig.4-20). The square has three entrances connected onto the streets. The southern space can be used for gathering and events while the northern space remains as grain drying ground since it can receive more sunlight (Fig.4-21). The usage of the square can be more flexible if there is a need, such as providing a space for farmer’s market or movie screening.

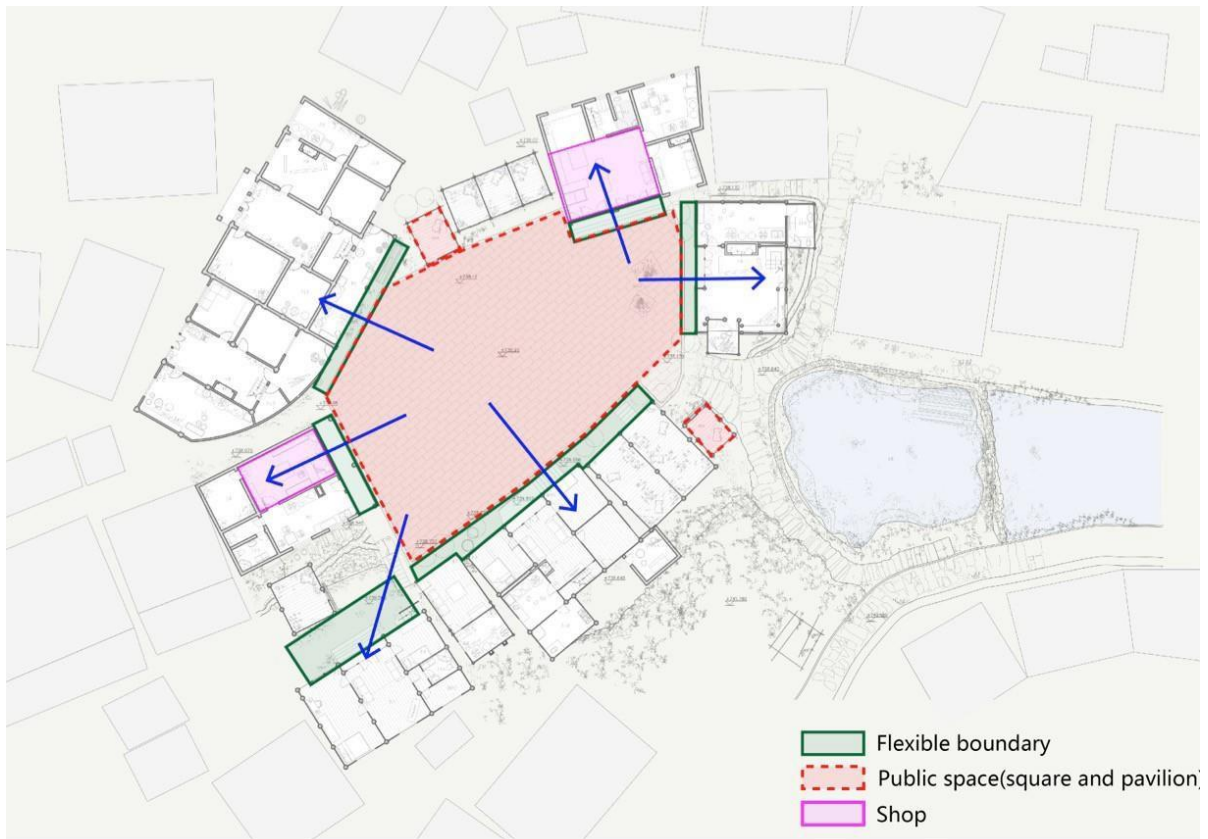
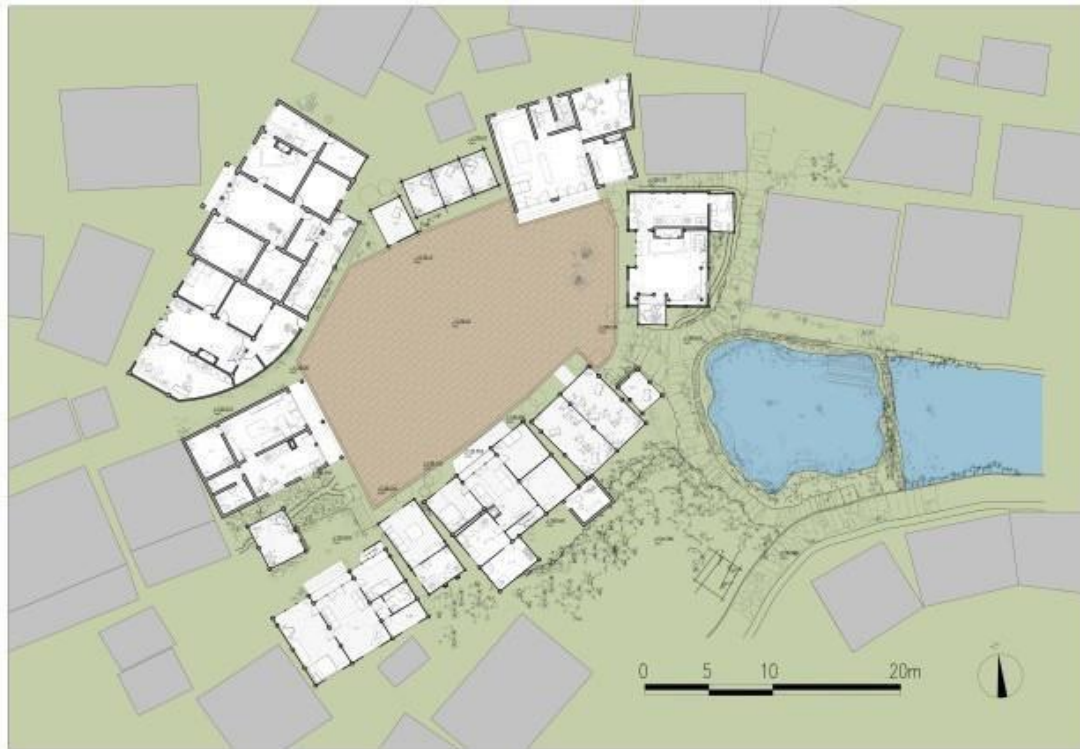


Fig.4-20 Spatial configuration



Fig.4-21 Spatial configuration 2

9.3 Plan Drawings



After



Before

Comparison of the current village and the proposed design



Master plan

Comparison between before and after the design





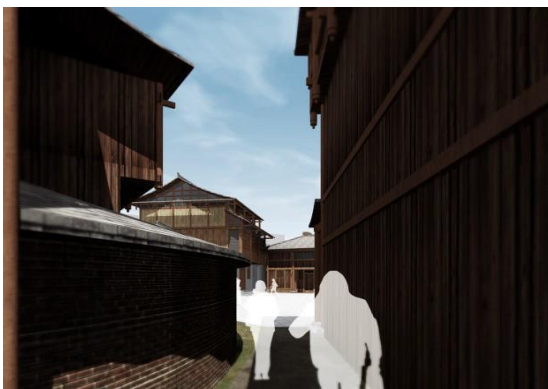
Other



Watching in southwest



Watching in southeast



Watching in northwest



Looking down from northwest

Elevations



Northern elevation



Southern elevation

My plan shows that I design many small spaces that are surrounded by trees and contain tables and benches to ensure sufficient public gathering space. During the day time, both adults and the children can enjoy their time in these spaces. I also tend to install streetlights to ensure the accessibility and safety in the night (Fig.4-22).



Farmer market



(1)



(2)



(3)



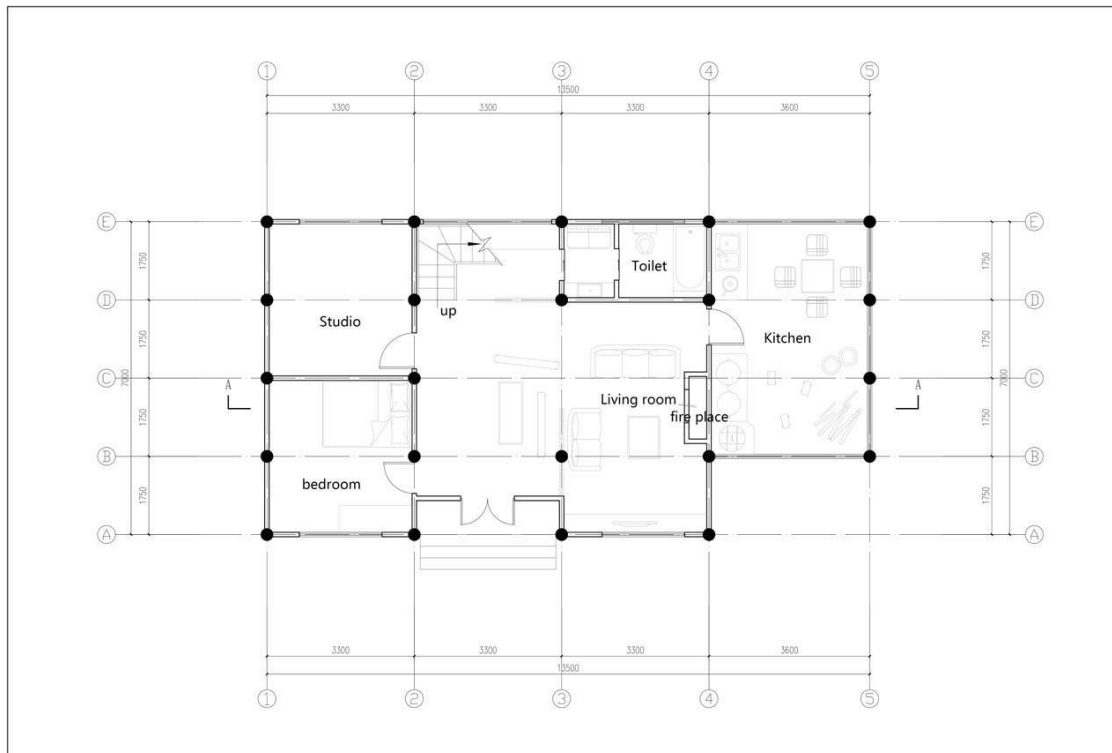
(4)



(5)

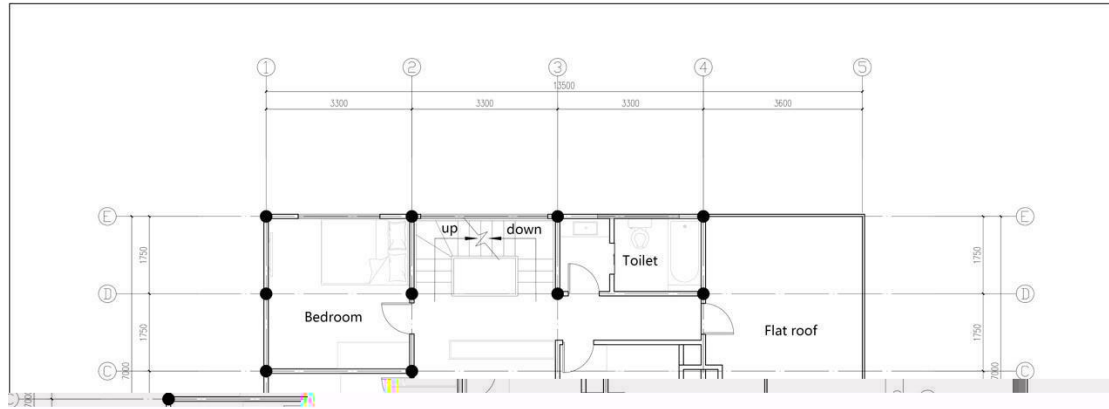
Fig 4-22 (1) (2) (3) (4) (5)

In addition, I have another plan to reform the living space of the villagers to improve their living conditions. The new house will have three-stories to maximize the living space. The upper floor will 4 bays long that includes three rooms that are used as the living room, the bedroom for the elderly and the fireplace, and a kitchen. A workshop can also be included to suits the need of the locals for making handicrafts.

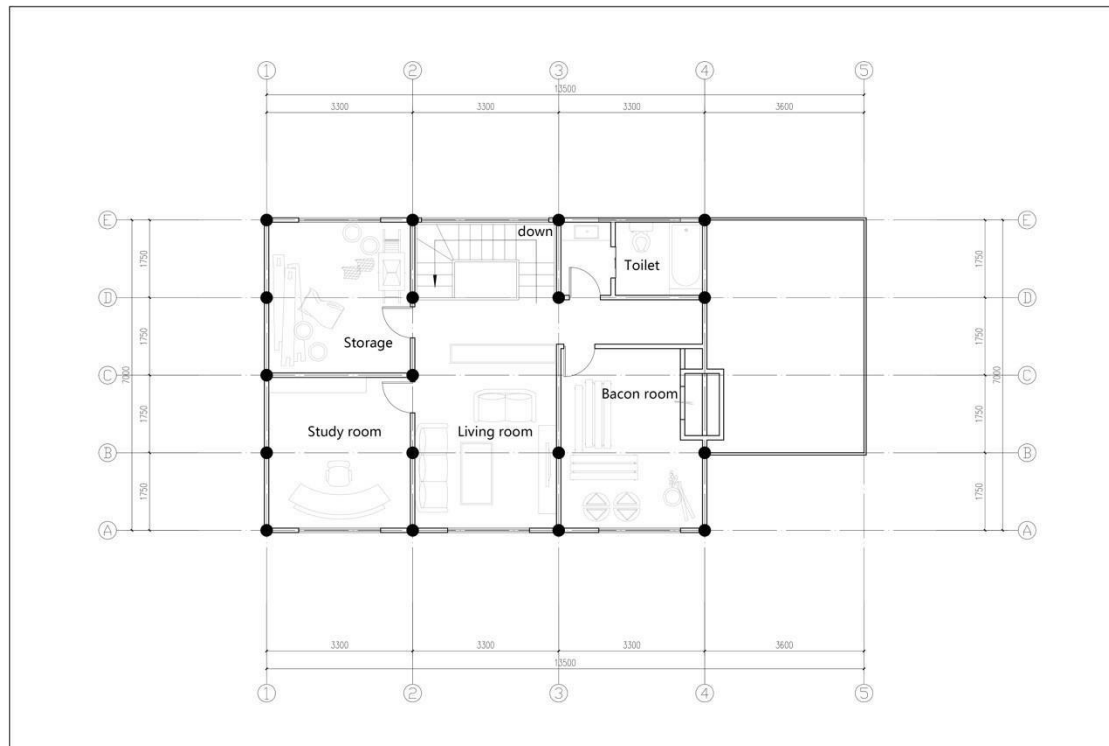


The first floor

Due to the growth of population, the top floor will include two more bedrooms for the younger family members and a balcony for drying clothes or grains. The third floor can also include a storage or a study, which can also be transformed into another bedroom depending on the family size. Each floor will also contain a toilet and proper sewage system to improve the sanitation.



The second floor



The third floor

The elevation still adopt the traditional mode.



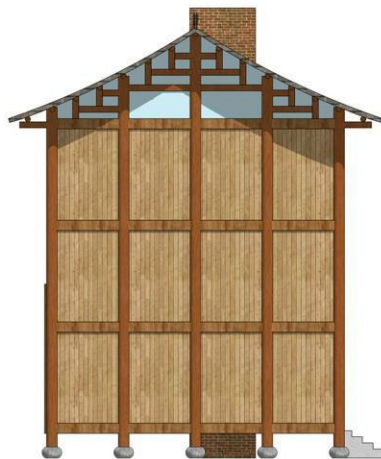
The northern elevation



The southern elevation

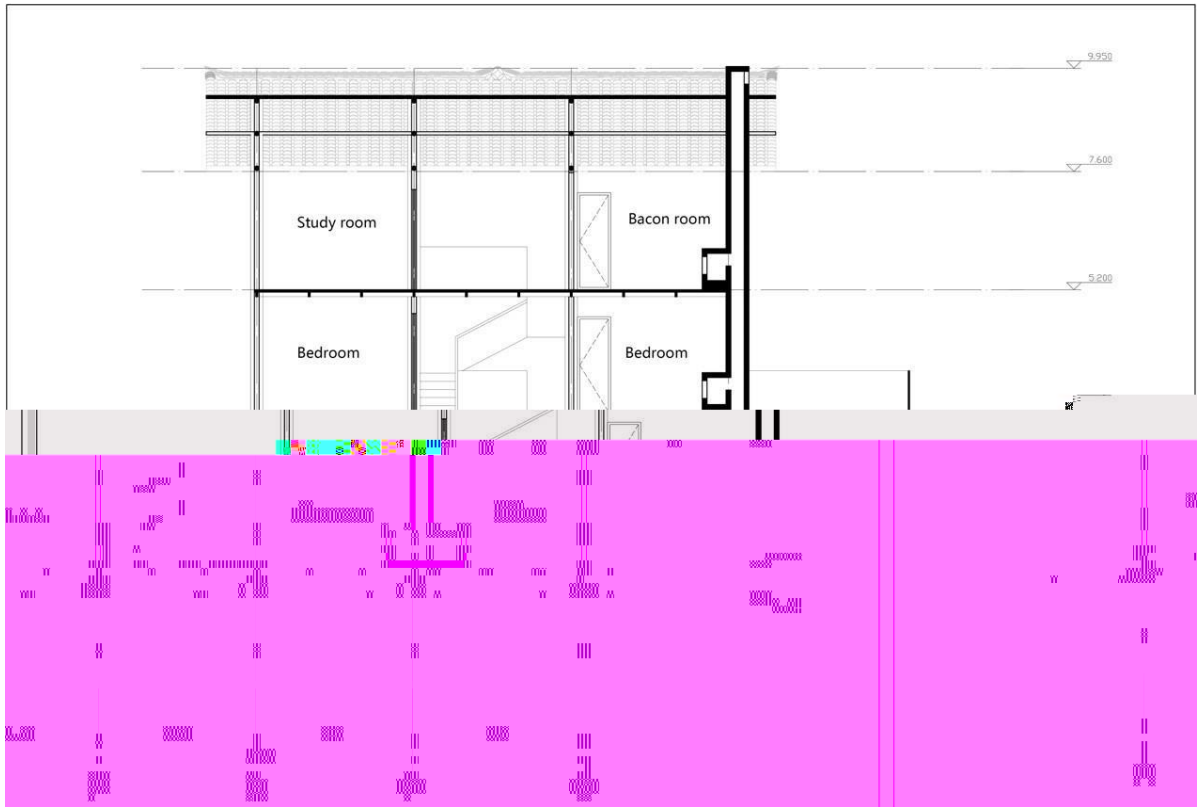


The eastern elevation



The western elevation

The section



The section

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